Railway Age Gazette

PUBLISHED EVERY FRIDAY AND DAILY EIGHT TIMES IN JUNE BY THE
SIMMONS-BOARDMAN PUBLISHING COMPANY
WOOLWORTH BUILDING, NEW YORK

CHICAGO: Transportation Bldg. CLEVELAND: Citizens' Bldg.
LONDON: Queen Anne's Chambers, Westminster.

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Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free:

United States and Mexico.....$5.00
Canada 6.00
Foreign Countries (excepting daily editions)..... 8.00
Single Copies.....15 cents each

Engineering and Maintenance of Way Edition and four Maintenance of Way Convention Daily issues, North America, $1.00; foreign, $2.

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

WE GUARANTEE, that of this issue 9,200 copies were printed; that of these 9,200 copies, 7,466 were mailed to regular paid subscribers to the weekly edition, 250 were provided for counter and news companies' sales, 1,187 were mailed to advertisers, exchanges and correspondents, and 297 were provided for sample and office use; that the total copies printed this year to date were 223,550, an average of 9,314 copies a week.

VOLUME 56 JUNE 12, 1914 NUMBER 24

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Discipline on the Burlington

Discipline without suspensions has made, on the Chicago, Burlington & Quincy, an excellent record, as will be seen by the four years' experience on that road, which is recorded in this issue. Many railroad officers believe that, with the kind of employees which *they* have to deal with, suspensions, with loss of pay, are necessary. Many who have abolished suspensions appear to have failed of success, and the subject has been beclouded with many contradictions. In this situation the Burlington affords an example where we have not only favorable expressions from its officers, backed up by statistical evidence, but also a bit of testimony of a kind never before heard of, namely, the application of the yardmen, who had been left out of the scheme, to be taken in. In view of the very reluctant, not to say unfriendly, attitude of the employees' brotherhoods towards all plans for abolishing suspensions, from the beginning, this action of the Burlington yardmen is significant. Of course, it can have been only through shortsightedness or prejudice that anyone could object to the *principle* of punishing by reason instead of by the harsher method; but, even so, it is a notable achievement to have broken down that prejudice. Daniel Willard, president of the Baltimore & Ohio, the road whose discipline was described in the *Railway Age Gazette* on January 16 last, was, in 1909, the chief operating officer of the Burlington, and that fact has its bearing on these two narratives. In such a complicated business as railroading, any important enterprise, if it is to succeed, must be made the first business of some strong man. The effect of that principle is seen in this matter. Mr. Byram, who had immediate charge of the inauguration of the change on the Burlington, succeeded Mr. Willard as chief operating officer, and thus has been in immediate touch with discipline throughout the five years. One of the most impressive facts in American railroad history is the very large number of hopeful movements that have failed, merely because of a change in officers. Here is a fact of an exactly opposite kind.

Raising the Morale of Railways

Some time ago the *Economist* of Chicago suggested the formation of some kind of an organization of railway men to "encourage a high morale" in the service. It is a remarkable fact that most of the offenses against law and good morals that are committed in connection with the management of railways are committed in their financing, and that in most cases those who commit them are men who have made their money as bankers, manufacturers or mine operators and have broken into railway boards of directors for the apparent purpose of exploiting the roads. In almost every case the railways whose finances as well as their operation are directed by men who have come up in the railway service are not only efficiently, but also honestly, managed. It is curious that this fact is overlooked, and that the very classes of business men from which the wolves that ravage the railways come are among the loudest in their lamentations regarding the way that railways are mismanaged. It occurs to us that if the membership of the organization which the *Economist* suggests could be made wide enough it might do great good. If it could be made to include as active members all the directors as well as all the executive officers the effect would be fine. In such an organization we suppose that democracy would prevail and that those who actually operate railways would be allowed to check up and shake the finger of scorn at the financial powers. This would benefit not only the railways but other industries, because thereafter when the railway directors who are large owners of stock and directors in industrial corporations went into the board meetings of their industrial concerns they would carry with them their elevated morality to the great benefit of banking, manufacturing, merchandising, mining, publishing, editing, and so on. The results in other industries would, we believe, be even better than in the railway business, because certainly the conduct of many of those who acquire railway stock and directorates with money made in other industries indicates that the amounts of grafting, stock-watering, stealing, law-breaking, and hypocrisy in the railway business must be negligible compared with the amounts of them elsewhere.

Taxation in Michigan

One of the important reasons for the present condition of railways in the state of Michigan, of which 13 have had a deficit for several years, and of which several are in the hands of receivers today, is made very clear by Professor Friday of the University of Michigan, in an article published elsewhere in this issue. The Michigan railways are overtaxed, and it is largely owing to this that there has been practically no extension of lines in that state under the present system of taxation. The average rate

per $1,000 of valuation has increased from $17.49 in 1901 to $21.56 in 1913, the present taxes consuming approximately 30 per cent. of the net earnings and 6 per cent. of the gross. This is about three times the proportion of net earnings paid in taxes by the railways of the United States as a whole, and is more than twice as great as the proportion paid by railways in adjacent states. While the percentages of net revenue from operation in Michigan to the total net revenue of the same railways as a system in the years 1909, 1910 and 1911 were 16.47, 18.14 and 14.53, the percentages of the taxes paid in Michigan to the total taxes paid by these railways in all states were 37.31, 34.52 and 32.96, respectively. The most significant aspect of the case, however, is the showing that the railways of Michigan are being taxed at a higher rate than other kinds of property in the state. Professor Friday shows, for example, that while the railways are assessed at approximately full value, other property in the state is assessed at not more than 65 per cent. of full value, and that other kinds of property also pay lower rates on their valuations. It is frequently charged by railway men and others that railways are taxed on a higher basis than other kinds of property, in other states as well as in Michigan; and it is probable that investigations in other states similar to that made by Professor Friday would disclose somewhat similar conditions elsewhere. In other states, as in Michigan, the assessors are locally elected and annually appear for re-election before the local constituency whose property they have just assessed. They not only lack the capacity to make an expert appraisal of the many classes of property within their jurisdiction, but are actually dependent for their jobs on the good will of the local property owners; and politics and an equitable system of taxation are incompatible.

THE OUTLOOK FOR BETTER BUSINESS

[From the Daily Railway Age Gazette of June 10, 1914.]

EVERYBODY in the railway or railway supply business has been as blue as indigo for many months regarding the business situation. The *Railway Age Gazette* has been as blue as anybody else. It is our opinion, however, that the time has arrived when reason suggests that optimism should supplant pessimism in these two great lines of industry. A combination of conditions is developing which, if nothing happens to interfere with its development, will make inevitable a great improvement in the situation of both the railway companies and the railway supply companies. The conditions referred to are not "psychological" but of the most substantial character. Among them are the following:

1. The government crop report for June, which was issued on June 8, is the most favorable that has been made in years. If present prospects are realized the wheat crop will be 137,000,000 bushels larger than any ever harvested before, while the yield of oats and barley will be the second largest in the history of the country. The railroads must get ready to handle these enormous crops. If they are to do this they must begin at once largely to increase their expenditures for equipment and supplies.

It would seem that it may be safely assumed that the crops if they prove to be as large as expected, will cause a large indirect increase of railway traffic as well as a large direct increase. The enlargement of the purchasing power of the farmers that these large crops will cause will tend to cause an increase in the movement of manufactured articles of all kinds, and this in turn will tend to cause a proportionate increase in the movement of fuel and raw materials to the factories.

Even though the crop prospects were less promising there probably would be an increase in orders after the end of this fiscal year, because the roads have now practically been out of the market for a year. With the supplies that they have on hand very small, the amount of bad order equipment that they have very large, and the prospective crops to be moved enormous, it would seem that there cannot fail to be a very substantial increase in the orders placed with the supply companies at an early date.

2. Not only is there a promise of a large increase in railway traffic, but there is also a promise of an improvement in the situation with respect to railway rates. A government special committee has just made a report conceding that the compensation now paid to the railways for carrying mail is on a wrong basis and is too low, and recommending changes which would increase the compensation for carrying the regular mails and also provide additional compensation for the handling of the parcels post traffic. It is hoped that in its decision in the eastern rate case the Interstate Commerce Commission will grant most of the advances asked, and it is almost certain that as a result of this case, the railways of the entire country will be allowed to impose charges for numerous special services which heretofore have been rendered free.

Finally it would seem that the railways of the entire country are bound to benefit by the decision rendered by the Supreme Court of the United States on June 8 in the Shreveport case. In this decision the court held that where state rates are so fixed by any state authority as to work a discrimination against interstate commerce, the Interstate Commerce Commission may remove the discrimination even by increasing the state rates. It would be hard to overestimate the importance of this ruling. It would seem that in any instance where the Interstate Commission held interstate rates to be reasonable, and a state authority prescribed relatively lower state rates, the Interstate Commission would have full power to nullify the state rates. For example, in many cases the railways have fixed and the Interstate Commission has allowed to remain in effect two-and-a-half and three-cent fares for interstate passenger traffic, while the states have fixed maximum two-cent fares. It would appear that under the decision of the Supreme Court the Interstate Commission, wherever it may hold two and one-half or three cents to be a reasonable passenger fare, may nullify the two-cent fare laws of the states. Likewise the decision would seem to make even clearer than it was before the paramount authority of the commission to regulate the physical operation of railways, whether state or interstate.

The prospects of a large increase in railway traffic, of an improvement in the rate situation, and of the harmonizing of state and interstate regulation under the control of the Interstate Commerce Commission, can hardly fail to have an early and beneficial effect on the railway and the railway supply businesses.

THE NEW ST. PAUL BONDS

THE way in which investors receive the present offering of Chicago, Milwaukee & St. Paul 4½ per cent. bonds will form an interesting and instructive criterion of the state of the railroad investment market for "savings bank" long term bonds.

The novel feature about these bonds is that they are not underwritten. They are being offered by Kuhn, Loeb & Company and the National City Bank, both of New York, and can, of course, be bought through any banking or bond house, but the two strong banking houses, which are making the offer are acting simply as agents for the railroad company. It is understood that they are taking one-half of 1 per cent. as compensation for their services in calling the attention of their clients to the issue and are not obligating themselves in any way to take bonds that are not subscribed for by the general public. This saves the railroad company about 1 per cent. net—the usual banker's commission being 1½ per cent.—and gives it the benefit of the full price at which the bonds are offered to the public, the bonds usually being sold to an underwriting syndicate at in the neighborhood of 2 per cent. less than the offering price to the public. This is a total saving of about 3 per cent.; but on the other hand the railroad company has no assurance that it can sell all of the $30,000,000 bonds at this price, nor can buyers of these bonds have any assurance that all of the needs of the railroad company for which it is selling the bonds will be met through their sale.

The $30,000,000 bonds are known as series A and are due January 1, 2014. Interest at the rate of 4½ per cent. is payable April 1 and October 1. The bonds are offered at $965 per $1,000 bond. At this price the investor gets an interest yield of 4.66 per cent.

The bonds are secured by the general and refunding mortgage of the Chicago, Milwaukee & St. Paul Railway Company, which is dated November 1, 1913, and of which the trustees are the Guaranty Trust Company of New York and Alexander J. Hemphill. The present $30,000,000 bonds are the first bonds to be issued under this mortgage, but through the provisions of the indentures securing the $33,369,000 25-year 4 per cent. bonds of 1909, the 250,000,000 francs ($50,000,000) 4 per cent. 15-year European loan of 1910 and the $50,000,000 4½ per cent. convertible bonds of 1912, these bonds, totaling $133,369,000, are secured equally with the present issue and any future issues under and by this general and refunding mortgage. The only limitation upon the total amount of bonds which may be issued under this general and refunding mortgage is that the total bonds, including the $133,000,000, approximately, reserved to retire the debenture and convertible bonds above mentioned and $184,421,000 of the general and refunding mortgage bonds reserved to retire prior lien bonds now outstanding, shall not exceed three times the par value of the stock outstanding. The company has outstanding $232,623,100 stock, approximately half of which is preferred, on which the company is paying 7 per cent., and the other half common, on which it is paying 5 per cent.

The situation as it stands at present, therefore, is that the total under the three-times-the-capital-stock provision which could be issued is $697,869,300, of which $316,428,200 is reserved to retire outstanding bonds and $30,000,000 constitutes the present issue. This leaves a minimum possible future issue of these bonds of $351,441,100. This amount, of course, may be increased through the conversion of part or all of the $50,000,000 convertible bonds or through the issue of additional stock.

The general and refunding mortgage is a lien subject to the prior liens of the mortgages securing the $184,421,000 bonds on 9,322 miles of railroad directly owned and on 102 miles jointly owned. This mileage includes the entire main line and the branches of the old Chicago, Milwaukee & St. Paul and of the Pacific Coast extension main line and branches. The total prior lien bonds are at the average rate of $19,676 per mile of road. The total funded debt, including the present issue of prior liens and the debenture convertible and European bonds, is at the rate of $36,960 per mile.

It will be remembered that the Pacific Coast extension was financed through the sale of St. Paul stock to its own stockholders and through the issue by the Chicago, Milwaukee & Puget Sound Company of $181,664,500 first mortgage bonds of the Puget Sound company to the St. Paul, which sold to the public $27,175,000 bonds of the Puget Sound. The Puget Sound bonds which the St. Paul retained are deposited under the general and refunding mortgage bonds. This, therefore, makes the general and refunding mortgage bonds an indirect first mortgage on 2,026 miles of modern railroad subject to but $27,175,000 prior lien bonds.

The mortgage provides for the appointment of a receiver in case interest charges are not paid, with the usual six months' grace, upon the either initiative of the trustee or upon the request of the holders of 15 per cent. of the bonds. In case of default the property must be sold as an entirety, subject, of course, to the prior lien bondholders' claims.

In the fiscal year 1913 the Chicago, Milwaukee & St. Paul, which includes the Pacific Coast extension, earned $27,551,000 operating income, after the payment of expenses and taxes. There was $3,973,000 other income—interest dividends, etc., received—making a total of $31,524,000 available for interest payments. The entire interest payments and rentals called for $13,383,000. The additional interest requirements of the present issue of bonds would be $1,350,000 a year, which, added to the interest requirements of 1913, would still have left a margin of over $16,000,000, or nearly double the interest and rental requirements.

The debenture 4 per cent. bonds, which are secured equally with the present issue by the general and refunding mortgage, were selling at 92½ prior to the announcement of the new issue and the convertible 4½'s, which are also secured by the general and refunding mortgage at 102⅛. The bonds of the present issue are legal investments for savings banks in New York, Massachusetts, Connecticut, etc. In security and breadth of market, therefore, and in equity in surplus earnings, the bonds are a conservative investment for trust bonds or for persons wholly dependent on their income from investments.

At the price at which the bonds are offered they yield a somewhat better return to the investor than some of the other standard issues with which their security and market make them comparable. Thus the Chicago & North Western general mortgage 4's are at present selling at a price to yield the investor 4.17 per cent. and the Chicago, Burlington & Quincy general mortgage 4's at a price to yield the investor 4.33 per cent. It should, of course, be borne in mind that a new issue of bonds must be offered at a slightly more attractive price than the market price of bonds which have already found their way into the hands of investors to make the offering a success.

REDUCING NEEDED SUPERVISION

ONE of the most marked features of the period of retrenchment that the railways recently have been going through has been the discharge by many roads of numerous experienced and capable officers of all ranks in all departments, and especially in the operating department. Vice-presidents have sometimes been retired and general managers given their duties, to save the vice-presidents' salaries. In other cases general managers have been discharged and general superintendents given their duties to save the general managers' salaries. In other cases two divisions that already were large have been consolidated into one to save the salaries of one staff of division officers. In other cases men performing special duties in the mechanical and engineering departments have been thrown out in bunches.

No more mistaken policy could be adopted in the much abused name of efficiency. The direct savings that can be made in this way are relatively insignificant. The aggregate salaries of the officers of the railways of the United States amount to less than 1½ per cent. of the railways' total earnings and to only about 2 per cent. of total operating expenses. A railway manager who has "fired" a lot of faithful and deserving officers may be able to boast that he is thereby saving at the rate of $200,000 or $300,000 a year, and that may sound well to banker, merchant and manufacturer directors who do not analyze railway operating statistics and perhaps do not know how to. But suppose that instead of mentioning in round numbers the amounts being directly saved in this way the railway managers who are following this policy should announce that they were saving by it only one-half of 1 per cent. of total operating expenses. That would not sound so big. And yet in few or no cases is this much saved by reducing the number of officials, for, on the average railway, to save one-half of 1 per cent. of operating expenses by acting on salaries alone, it would be necessary to reduce total salaries 25 per cent.

The worst of it is that in most cases an arbitrary reduction of the number of officers on a railway causes in the long run indirect increases in expenses which exceed by far the direct savings made. There are railways that have dead wood in their official staffs. Doubtless there are some that are over-officered. But there are a great many more that are chronically under-officered, especially in their operating departments. The greatest essential to more efficient and economical operation of a large part of the railways of this country is more scientific investigation of operating problems and more thorough supervision of the transportation, the mechanical and the engineering and maintenance of way departments. When business is poor there ought to be

more supervision to hold down the expenses of these great spending departments. When business is good there ought to be more supervision to keep the traffic moving and to prevent the expenses in these great spending departments from increasing excessively. And yet, while most railway officers who really study and think, instead of using rule-of-thumb methods, recognize these facts, there still continue to be railway managers who try to increase efficiency and save money by attacking their organizations with an axe.

It is but a matter of a short time until there will be a heavy increase in railway traffic if the present crop prospects are realized. A railway whose official organization is in good condition can prepare itself with relative facility to cope with such developments. The railways whose managers have been trying to economize by chopping at their organizations with a meat axe will be caught unprepared unless their managers speedily and completely reverse their present policies; and if there should be a sudden rush of traffic this fall there are many roads that are so under-officered that they could not possibly get ready to deal with it. In a period of heavy traffic such roads will lose much more in a short time from being under-officered and disorganized than could possibly be saved in a very long time by reducing their official staffs.

NEW BOOKS

Re-inforced Concrete Railway Structures. By J. D. W. Ball. One of the Glasgow Text Books of Civil Engineering; edited by G. Montur. 6 in. by 9 in., 213 pages, illustrated, cloth binding. Published by D. Van Nostrand Co., New York. Price $2.50.

The generally accepted principles and processes used in the design and construction of re-inforced concrete structures are covered in Ball's Re-inforced Concrete Railway Structures, with particular reference to the problems confronting the railway engineer. The author has attempted to avoid complicated formulae as far as possible, using graphical solutions in many cases. A number of abstracts from specifications relating to materials and labor are included, and numerous descriptions of concrete structures are presented, but in both cases the illustrations are limited almost entirely to English practice. The first three chapters of the book take up preliminary considerations, bending stresses and shear stresses. The next six chapters deal with the design of common railway structures, including buildings, foundations, retaining walls, bridges, arches, ties and fence posts. The last chapter contains a summary of the notation used in the book by the author.

Proceedings of the American Wood Preservers' Association. Size 6 in. by 9 in., 522 pages, illustrated, bound in cloth and paper. Published by the American Wood Preservers' Association, F. J. Angier, secretary, Mount Royal Station, Baltimore & Ohio Railroad, Batimore, Md. Price: cloth, $3.50; paper, $2.50.

The proceedings of the tenth annual meeting of the American Wood Preservers' Association held at New Orleans, January 20-22, 1914, inclusive, are presented in a well edited and illustrated volume. These proceedings contain much information of interest to students of wood preservation, and especially to railway men. In addition to the complete report of the New Orleans meeting, with papers and discussion, 70 pages are devoted to statistics relative to wood preservation, compiled from data prepared by the United States Forest Service and other sources. Among the subjects covered in this way are the following: Quantity of Wood Preservative Consumed and Amount of Wood Treated in the United States in 1913, by Clark W. Gould, U. S. Forest Service; The Consumption of Wood; Timber Treating Plant in North America in December, 1913, by W. F. Goltra, and detailed data regarding the kind of materials treated and the preservatives used at the different individual treating plants in the country. This volume contains a great deal of valuable information regarding the rapidly increasing industry of wood preservation.

Letters to the Editor

THE PROBLEM OF EMPTY MILEAGE

Chicago, Ill., April 17, 1914.

To the Editor of the Railway Age Gazette:

While freight cars are built for the purpose of moving freight, such movement necessarily involves more or less empty mileage.

Unnecessary empty mileage is economic waste, and it is this feature which is considered below.

Whenever business decreases, foreign cars no longer needed are turned homeward, and the question of minimizing the resultant empty mileage assumes corresponding importance. At such times various remedies are proposed, most of them impracticable. Variable per diem is one of these, its exponents not recognizing the fact that surplus cars will move as fast under a twenty-five cent rate as they will at twice the figure, and that indeed some very high figures have been made when the per diem rate was relatively very low.

Another fallacy is the storage of cars under suspended per diem, and this will be mentioned later.

The ideal and ultimate solution of the problem is conceded to be the regulated box car pool with provision for the maintenance of the cars in serviceable condition, but until this pool with its provision for maintenance can be adopted, Car Service Rules 1 to 3, inclusive, should not govern box or general service cars, and for the purpose of this argument what follows may be considered, for the convenience, as applying to such "legal tender equipment."

These cars may be divided into two classes, viz.,

(1) Those in general worn out or wrecked condition moving under home-route cards as provided for in MCB rules 120 and 121, and

(2) Those moving home in more or less serviceable condition.

As the Master Car Builders' Association will undoubtedly soon abolish the iniquitous home-route card which licenses the handling of defective equipment over long and circuitous routes at great hazard and expense, that feature may be considered as disposed of and attention given to the other class.

Experience has shown that despite the rule, foreign cars are not given the attention necessary to keep them in condition for service and until, in connection with the regulated pool, a plan is worked out which will insure such maintenance, these cars should be sent home when no longer needed so that they may be repaired by the owners.

This granted, it follows that they should move via the shortest practicable route, and as the owner receives per diem up to the time that the car reaches home, such owner should pay a uniform reciprocal rate, possibly three cents per mile (plus bridge and terminal arbitraries), to the short-route roads, settlements being made on balances for semi-annual periods or otherwise as decided upon.

Two objections will be urged against this plan: first, that the owner should not be required to pay for the return of the car and, second, that the short-route road, not having handled the car under load outward bound, should not be required to pay per diem and handle it empty upon return.

The answers to these objections are as follows:

With the per diem rate at the present figure, the owner is receiving a return which fully covers the average cost of ownership (interest, depreciation, taxes and repairs) with an ample margin from which to pay for short-route handling, while the railroads, as short-route lines, can well afford to absorb any difference between the short-route rate and the actual cost of handling and per diem in order to participate in the general economy to be secured by the elimination of the enormous mileage now made in the handling of cars home via zig-zag, horseshoe and maze routes.

All roads would participate under this co-operative plan, both as owners and short-route lines, with large net savings as the result.

Details such as—

(a) A standard inter-line empty card way-bill;

(b) Standard car cards;

(c) Decision as to whether the initial road or the car owner shall select the route (and if the latter, whether or not the former shall pay per diem while awaiting instructions);

(d) Provision for payment of short-route mileage to the initial line only to the extent that mileage in excess of that of the record route is necessary, with possible minimum;

(e) Requirement that initial line shall deliver cars of direct connections to owners regardless of excess mileage involved;

(f) Provision that any line breaking home route movement by using the car shall receive no short-line allowance;

(g) Requirement that congested terminals shall be avoided where practicable in short-routing, etc., etc.,

are all matters of detail which can readily be worked out in connection with the necessary rule changes.

E. H. DEGROOT, JR.,
Superintendent of Transportation, Chicago & Eastern Illinois.

CHICAGO, Ill., April 10, 1914.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The statement that an increase in the per cent. of empty mileage means an economic waste presupposes that in the operation of the railroad prior to such increase in the percentage of empty mileage there had been no variations from economical methods; that is to say, that the economic per cent. of empty mileage in all cases is that represented by the maximum per cent.

Now, this maximum per cent. may itself mean uneconomical operation.

To illustrate this point: Many of the lines operating in the Eastern country have heavy shipments of coal to tidewater ports, but for the equipment going East with this coal there is practically no return loading or so little as to be almost negligible.

It is quite within the bounds of possibility that should the West-bound movement of coal cars be discontinued for a period, the per cent. of loaded mileage might be so increased as to make an appearance of extremely successful car handling, but it would still remain true that sooner or later the empty cars would have to be moved West to the mines.

While this is, of course, an extreme illustration, yet in greater or less degree such a situation might occur and is all the time occurring; and it is, I think, a gratuitous assumption that in itself an increase in the per cent. of empty mileage must necessarily be taken as an indication of lack of economy in operation, of a lack of common sense in the rules which now govern car handling, or an economic waste.

It is probably not too much to say that there is a normal per cent. of empty mileage which is economical and that this normal per cent. may vary and doubtless does as between roads or even as between different sections of the same roads, and different seasons of the year.

As a secondary proposition, it may, I think, be asserted that the one and only way in which the per cent. of empty mileage can be decreased below that which is normal for the territory, traffic, and seasons of the year, is by the inducement of additional traffic in the reverse direction.

I wish particularly to lay stress upon the fact that the proposition that an increase in the per cent. of empty mileage is not economical depends for its successful establishment upon the establishment of the collateral proposition that the relatively low per cent. of empty mileage prior to the time of the increase was brought about by correct operating methods.

There have not been lacking certain opportunities to develop the facts in connection with this matter. A series of tests and figures running over a period of more than two years on one railroad of considerable size, has afforded an opportunity to arrive at some definite conclusions based upon actual facts and figures.

The results are particularly illuminating as bearing upon the fact that in many cases an increase in empty mileage is consequent upon a lack of proper car handling in the period preceding.

For obvious reasons, the name of the road is not given, nor are the years, which are simply referred to as first, second and third. On the road in question in the first year, the per cent. of empty mileage stood at 29.3. The average mileage per car per day made was 19.1. The car hire balance stood at approximately a debit of $470,000, and the freight earnings at approximately $11,350,000. The average number of cars used for the traffic on this line was 5,385 system, and 8,560 foreign; total 13,945.

The results for the three years are shown in tabular form below:

	Third year	Second year	First year
Freight earnings	$11,350,000	$10,520,000	$11,380,000
Total freight car mileage	102,180,000	102,740,000	101,080,000
Per cent. empty mileage	29.7	34.8	29.3
Average mileage per car per day	25.3	21.4	19.1
Average cars in freight service	11,119	12,558	13,945
Car hire balance	*95,000*	*1,300*	470,000
Tons per freight train mile	252.02	241.85	249.83
*Specified transportation expenses	3,380,000	3,650,000	4,120,000

*Includes yard, train, engine house expenses, and fuel, water, lubricants and all supplies.

It will be noted from this tabulation that while in the second year the per cent. of empty mileage rose from 29.3 to 34.8, in spite of this fact the car hire balance was cut down upwards of $470,000, the number of cars doing the work was cut down about 1,400, the miles per car per day was increased from 19.1 to 21.4, and although the freight earnings fell off about $800,000, yet it is a matter of record that in addition to the saving in car hire of more than $400,000, there was a saving in the transportation expenses specified of $470,000, although during the second year materially larger sums were spent in superintendence, telegraph and station service.

In other words, a saving in train employees, in fuel, in lubricants, in train supplies, amounting to nearly one-half million dollars, was made despite the increased per cent. of empty car mileage.

Now, I am not arguing as a definite proposition that an increase in the per cent. of empty mileage is desirable or economical, but it is clear from the table given above that the figures of the second year compared to the first, during which time the errors of the first year were being repaired, do not show that there is any economic waste in a high percentage of empty mileage other than that necessitated by the application of incorrect principles in a prior period.

In establishment of the proposition that there is a normal economic empty car mileage per cent., it is only necessary to examine the performances of the third year as compared with the first and second. Here there were no errors of the past to be recuperated from and it will be particularly noted that with practically an identical freight revenue, by the use of a smaller number of cars and with proper attention to their movement currently, a very heavy increased miles per car per day was obtained. The car hire balance approximated $100,000 credit, and there was a further reduction from the second year in the specified transportation expenses of about $270,000.

The percentage which these specified transportation expenses were of gross earnings were:

First year	25.11 per cent.
Second year	23.36 per cent.
Third year	20.58 per cent.

These results were, of course, based upon a careful and systematic study of the conditions as applying to a single railroad. They were obtained there by a close scrutiny of the underlying conditions, and the reasons for the situation, accompanied by a more or less intelligent effort to ascertain the correct remedy and then to apply it.

It is very far from a safe assumption that because something is costly now, it is caused by conditions over which we have no control.

In many instances, such a situation is created by a lack of proper attention to the factors which are creating unfavorable conditions, and which have operated to so create them for some

time preceding the period when the matter becomes of importance.

The yard master and the station agent make the actual distribution of cars during periods of car shortage. There is little intelligent current supervision of the efforts of these officials. That is to say: In a period of car shortage there is usually no real effort made to apply cars on loading orders with any purpose in view except the primary one of getting the first car placed; no attempt is made to serve the secondary purpose of placing the right car.

It is assumed that this is an economical practice. It was not economical for the road for which the figures are given above, and it is open to doubt whether it is actually economical for any road. Expressions of opinion are, of course, valuable, but they are not conclusive, and I know of no definite data on the subject.

It is a matter of record, however, that it invariably follows, when in a period of recession in traffic and a consequent car surplus, the movement of empty cars increases, we begin to examine the situation with the attention it deserves; but we are then eager for legislation which will minimize the results of what has been done and assume that these results are inevitable. We rarely analyze the methods which created the condition.

The principles of correct car handling are probably susceptible of demonstration, but to do this will require very laborious investigations into a multitude of conditions. Studies of the movement of traffic over wide areas must be undertaken; some comprehensive knowledge of seasonal variations in widely scattered locations must be obtained; the problem of bringing the empty car to the freight must be considered as well as that of using the first available car. We can't have 100 per cent. loaded mileage. The problem of ownership cannot be avoided.

About the only definite knowledge we have is that the existing rules are wholly disregarded when cars are scarce and are burdensome when cars are plenty; possibly this is by reason of their previous disregard.

Certainly the situation calls for an intelligent study of the whole question. It is sufficiently important to command the services of very first class men, but pending this, study of conditions on individual roads may bring surprising results, as was experienced on the road referred to above. These results have been briefly summarized in the hope that such individual studies may be undertaken.

EXPERIENCE.

RATES AND WAGES

RICHMOND, Va., May 28, 1914.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Criticism is of two kinds, one destructive, the other constructive. Literature abounds with destructive criticism, of which Carlyle is the master. Too few are constructive critics, because to find fault is easy, while to do better is difficult.

Today railway management is the subject of violent destructive criticism. Mr. Brandeis, with all of his ability, and forceful brilliancy, has been, up to this time, a destructive critic as to railways. Beyond question the heads of our great railway systems would welcome that criticism which would enable them to better management, to avoid improvident methods, to render efficient public service for a just payment for that service. The heads of our great common carriers are simply human, men trained for the duties that are laid upon them, but the victims of the same human limitations that fix the limits of the best of us. Therefore, just criticism of these public servants, for they are that in fact, should not be merely faultfinding, but suggestive of better methods.

Even as with these heads of common carriers, so with any governmental body to which is delegated control of any public affair. The Interstate Commerce Commission, able and honest though it is, is humanly limited, no less than are limited the heads of our common carriers. That commission stands charged with power greater than that of any other governing body. It virtually determines the flow of the life-blood of common carriers. But that determination affects now only the in-flow. The outflow is fixed largely by the importunate demands of labor.

To a fair wage, labor is entitled. Naturally, it wants the largest possible wage. Guided by able leaders it has become almost imperial in its demands. Should not the outflow of the life-blood of the common carrier be regulated governmentally, even as is the in-flow? Can labor say no to that question?

Wage disputes are perennial and costly. Is it not possible to put an end to wage-wars by sane regulation by a recognized authority? Not arbitration, but regulation. Of course justice does not dwell here. Courts were ordered not to administer justice, but that disputes might cease.

"No rogue e'er felt the halter draw
With any great respect for Law."

Logically, can the Interstate Commerce Commission stop short of regulating wages, even as it regulates rates?

Should not the hand that controls the bung-hole control also the spigot? Certainly the in-flow and the out-flow should be in some logical ratio. Who shall fix that ratio?

It is easy to find fault. It is hard to do better. We need builders. We are obsessed with wreckers. Welcome would that builder be who could show us how to regulate rates and wages so that justice might be automatic, approximately, if not exactly.

Can our Interstate Commerce Commission solve this problem?

Is this more difficult of doing than is the finding of the "Value" of a common carrier?

JAMES POYNTZ NELSON.

CORRESPONDENCE FILING

PITTSBURGH, Pa., May 22, 1914.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In your issue of May 15, 1914, page 1075, there is an article on filing correspondence that makes good reading for the office that can afford it, but for the average office it simply spells "IMPOSSIBLE."

I have been working a scheme for 12 years which can be easily adapted to the office of the small officer who cannot afford file clerks or file cabinets.

By combining subjects with dates any letter can be easily located. A list of 100 subjects, 00 to 99, will take care of the business of the ordinary railroad office, and a list no longer than that can be easily memorized. Then file by months and years. During the current year a person can usually remember about what month a particular subject was handled, and after the year has passed one can usually remember about what year a certain matter was handled.

For example: All papers for 1914 would be filed under 14; thus giving a period of 100 years before the number 14 would be again used. Next comes your subject number, as each year's business would be subdivided into 100 items. Next comes the number of the month, as each subject under each year would be subdivided according to the months, so if you remember about what month papers were handled you can locate quickly. This would give you six figure index serial numbers good for 100 years. If the list of subjects shows employees as 21, then a letter on employees in May, 1914, would bear the index number 142105. In October the number would read 142110. If employees were 00 or 01, for month, of May, 1914, the index number would read 140005 or 140105. The scheme can be amplified by using subject numbers from 000 to 999.

CLIFFORD VAN ALLEN,
Train Master's Clerk.

NEW CUNARD TRAIN TO LIVERPOOL.—The Cunard Company has recently made arrangements with the Midland Railway whereby a special train will be run from St. Pancras station in London to Liverpool at six o'clock every Friday evening. This train will be available for passengers who wish to proceed to Liverpool on the night before the sailing of the Cunard boats, in preference to traveling by the "Atlantic Special" from Euston station on Saturday. As it happens, the service will be inaugurated on May 29, to connect with the sailing of the *Aquitania* on her maiden voyage.

Discipline on the Chicago, Burlington & Quincy

Good Results of Abolition of Suspensions Shown by Four Years' Records; Better Conduct, Greater Safety

Discipline without suspension has now been in effect in the train service on the Chicago, Burlington & Quincy since early in 1909, and the company has the records of four full years from which to compare the results. An inquiry concerning these results, from the standpoint of the officers, the employees and the public, brings answers under all three heads of a very satisfactory nature. The standpoint of the public is that of an interest in the safety and the smoothness with which the train service of the road has been carried on. Safety has increased and friction between officers and men has been decreased—at which the public should be pleased.

The most significant index of the results is the feeling of the general officers. This, as expressed in words, must be recorded as in every way satisfactory. In brief form, it is set forth in a letter from H. E. Byram, vice-president of the Burlington, to an officer of another road, which is reprinted below.

The feeling of the employees is also of interest. We have no formal expression of this, but we have the fact that early in 1913, after canvassing their experiences for upwards of three years, the employees asked to have the system extended. As originally organized, the new system took in (a) conductors, (b) trainmen, (c) enginemen and (d) firemen. The last two classes included men doing yard work, while the other two did not; but now the committee representing the Brotherhood of Railway Trainmen (to which most of the yard switchmen belong) has asked that suspensions be abolished in the yards also. The request has, of course, been granted. Another testimony to the fact that the employees appreciate the benefits of the system is the statement of the officers that individual employees now take scrupulous care to keep an active watch on their records. The system of "book suspensions" has been objected to by employees on many roads. The most definite criticism that we have heard made on behalf of employees, as a ground for their objections, is that such records are not understood. The employees feel that something is being concealed from them. Brotherhood leaders have said that individual employees failed to appreciate in their full gravity the entries recorded against them and that, therefore, some employees were not as alert in the protection of their own interests, as against a careless or unfair officer, as they would be under a system better known and better understood. This criticism apparently has no application to present conditions on the Burlington.

STATISTICAL RECORDS

The views of the officers of the Burlington are reinforced by the statistics; first of the number of cases of discipline recorded in the successive years and, second, those of the number of train accidents—and here is where the public is interested. A reduction in the number of cases of discipline is prima facie evidence of improvement; and it constitutes strong presumptive evidence as well, unless there is something to controvert it, such for example, as would be afforded by a deterioration in the spirit or the efficiency of the forces. If a superintendent reduced his number of discipline cases by omitting to reprimand or dismiss where reprimand or dismissal ought to be imposed, he would soon impair the character of his whole force. The figures concerning accidents afford strong evidence that the efficiency of the Burlington forces has not been impaired.

Suspensions were abolished on May 1, 1909. The year ending on June 30, 1909, therefore shows a record five-sixths of which is based on practice under the former plan. Under that plan, the wages lost by trainmen suspended aggregated about $20,000 a year. Taking the five years to June 30, 1913—one year mostly under the old plan, and four years fully under the new, the cases of discipline as shown in percentages of the average number of men in service, shrank from 42 to 22 as follows: 42, 31, 26, 23, 22. These figures appear in the totals of the last percentage column of Table A given herewith.

Table A.—Comparative Statement of Discipline for the Four Years Ending June 30, 1913.

	1 Year ending June 30,	2 In service	3 Disciplined: Record	4 Disciplined: Per cent.	5 Disciplined: Dismissed	6 Disciplined: Per cent.	7 Total	8 Per cent.	Revenue train miles run per discipline case
Conductors ...	1909	1,029	674	66	29	3	703	68	
	1910	1,134	477	42	44	4	521	46	
	1911	1,120	621	55	33	3	654	58	
	1912	1,117	341	31	29	3	370	33	
	1913	1,146	325	29	25	2	350	31	
Brakemen	1909	1,943	541	28	185	9	726	37	
	1910	2,316	339	15	333	14	672	29	
	1911	2,177	300	14	162	7	462	21	
	1912	2,072	348	17	167	8	515	25	
	1913	2,158	324	15	172	8	496	23	
Engineers	1909	1,652	931	56	29	2	960	58	
	1910	1,818	730	40	39	2	769	42	
	1911	1,732	457	26	21	1	478	28	
	1912	1,673	442	26	28	2	470	28	
	1913	1,734	429	25	33	2	462	27	
Firemen	1909	1,628	234	14	30	2	264	16	
	1910	1,842	174	9	93	5	267	14	
	1911	1,811	125	7	39	2	164	9	
	1912	1,754	138	8	56	3	194	11	
	1913	1,840	135	7	43	2	178	10	
Total	1909	6,252	2,380	38	273	4	2,653	42	*12,348
	1910	7,110	1,720	24	509	7	2,229	31	16,517
	1911	6,840	1,503	22	255	4	1,758	26	19,792
	1912	6,616	1,269	19	280	4	1,549	23	22,581
	1913	6,878	1,213	18	273	4	1,486	22	23,964

*Old system 10 months.
Column 3 shows the number of records made, exclusive of dismissals. Column 7 shows the aggregate of cols. 3 and 5.

As the number of men in service does not indicate precisely the number actually at work, there has been added to the table a ninth column, showing the ratios of discipline to train mileage. These figures, showing a reduction from one case in a little over 12,000 miles, in 1909, to one in 24,000 miles, in 1913, corroborate the others.

It will be seen that the number of men dismissed did not vary with the same regularity as the number who were reprimanded, but not dismissed; and that in 1910 the number of men discharged was 509. This would naturally be interpreted as showing that in the first year of the new scheme, the superintendents had to get rid of a good many men who ought to have been weeded out before. We are assured, however, that no such general "housecleaning" took place and that the cause or causes must be looked for elsewhere. Brakemen constituted 333 out of the 509 men dismissed, and the number of brakemen dismissed was 14 per cent. of the total average number in service. As the train mileage in 1910 was about 12 per cent. greater than in 1909, it is to be presumed that considerable numbers of new brakemen were employed in 1910. That on such occasions men deficient in some of the required qualifications are often hired, is well known. Their faults would automatically retire them from the service; and as will be seen, the smaller number of trains run during the following year, with an average of 373 fewer men, confirms the supposition that the usual conditions prevailed.

Tables B and C show the number of train accidents for the years under review. The diminution in the number of accidents per million train miles tends to justify the reduction in the number of cases of discipline. Discipline does not always mean accident; for men are disciplined for producing the causes of collisions and derailments, whether or not a collision or derailment follows and whether any damage is done or not; but there is a relation between the two tables A and C.

The number of train accidents has been reduced during the past five years by causes not having a very direct connection with discipline of trainmen, as for instance, increased use of the block system, and improvements in cars, engines and tracks. Table B, therefore, has general interest aside from the immediate subject

in hand. From 30.8 accidents per million train miles in 1906 to 14.5 in 1913, is a truly remarkable achievement.

Table C contains the more direct evidence concerning discipline, as is indicated by its heading. The steady reduction in the number of accidents per million revenue train miles from 1910 to 1913 (7.0—6.2—5.1—4.6) cannot be fairly attributed to good luck or to changed circumstances, or to anything other than an improvement in the conduct of the men; especially as the number of men in service was substantially the same in each of the last three years.

Table B.—All Train Accidents

Fiscal year	Number of accidents	Amount	Revenue train miles per accident	Number of accidents per million revenue train miles
1906	967	$433,125	32,487	30.8
1907	862	450,497	38,858	25.7
1908	652	254,878	49,962	20.0
1909	565	240,513	58,043	17.2
1910	651	316,220	56,607	17.7
1911	534	247,976	65,220	15.3
1912	569	213,618	61,471	16.3
1913	518	252,353	68,819	14.5

Table C.—Train Accidents Due to Acts or Omissions of Employees

Fiscal year	Number of accidents	Amount	Revenue train miles per accident	No. of accidents per million revenue trn. mi.	Cost in cents per revenue trn. mi.
1906	303	$191,316	103,681	9.6	.61
1907	291	152,812	115,105	8.7	.46
1908	205	81,949	158,902	6.3	.25
1909	184	82,817	178,229	5.6	.25
1910	258	185,736	142,834	7.0	.50
1911	217	147,001	160,495	6.2	.42
1912	179	73,542	195,404	5.1	.21
1913	163	108,932	218,702	4.6	.31

The figures showing the amount of loss, like those in the Government accident bulletins, include only the damage to cars, engines and roadway, all payments for loss of or damage to freight and those to passengers or others for personal injuries being excluded. Table C includes rear collisions, butting collisions, backing-in collisions, railroad crossing collisions and "sideswipes."

The essence of discipine without suspension, if it is successful, is to be found in the friendly and reasonable admonitions with which the officer corrects those employees who commit errors, or who show evidence of unfitness for their duties. Such admonitions must be forcible and adequate, or there will be a breakdown. The improvement in this respect on the Burlington is shown in Table D. These figures represent cases of men who were called in, not on the occasion of a particular accident, but as a result of a review of their records for a series of months.

Table D.—Men Interviewed Regarding Records June 30, 1909, to June 30, 1913

Number interviewed	637	
Clear since interview	277	= 43 per cent. of 637
Interviewed second time	73	= 11 per cent. of 637
Clear since second interview	30	= 41 per cent. of 73

Same for Year Ending June 30, 1913

Number interviewed	102	
Clear since interview	86	= 84 per cent.

The efficiency of the service is further shown by the following statement of the increase in freight train loads during the 8 years covered by Table B. In public hearings concerning claims for higher wages a familiar statement is that the increase in length and weight of freight trains has increased the danger to the trainmen. This table, taken in conjunction with those preceding, shows that the reduction of the accident records on the Burlington has not been made at the expense of economy in train loads.

Table E.—Average Number Cars Per Freight Train and Average Tons Per Freight Train

Years ended June 30	Cars per freight train*	Tons per freight train†
1906	32.44	426.52
1907	30.58	450.22
1908	31.99	450.40
1909	33.09	456.01
1910	32.66	456.62
1911	34.71	482.73
1912	35.37	511.63
1913	36.96	562.38

*Includes cabooses.
†Includes company's freight.

NOTES ON METHODS

The general plan of management of discipline on the Burlington is similar to that in force on the Baltimore & Ohio, which was described in the *Railway Age Gazette* of January 16 last, and with which it is assumed that the reader is familiar. As already stated, the Burlington scheme includes only the men on the trains; and of these, only those who are responsible for its safety; and until recently it did not include the switchmen in yard service. The superintendent of the division is the active administrator of discipline and the function of the supervising officer at headquarters is to secure uniformity. He does not overrule or reverse the superintendents. In those rare cases where he may find apparent cause for questioning the propriety of a superintendent's decision, the case may be referred back to the general manager. Indeed, those cases of discipline which are of special gravity go through the offices of the general superintendent and the general manager before a final decision is recorded. (The territory of the Burlington is divided into two general managers' districts.)

The following is the letter of the vice-president, before referred to, omitting those parts which repeat statements already given:

"On May 1, 1909, we discontinued the practice of actual suspension as a measure of discipline for infractions of the rules on the part of our engineers, firemen, conductors and brakemen, and substituted therefor a system of records and entries by which such acts and omissions as may be considered by the superintendent of sufficient importance to justify entering them upon the records of employees are so entered. We do not follow the system of book record where the measure of the discipline is calculated by a certain number of "marks." We simply record on the record of the employee at fault, the fact that a certain thing happened at a certain time, for which he was responsible, and the reason why. He is not taken out of service at all, and therefore does not lose any time. In case an employee accumulates an unusual number of entries he is called to the office of the division superintendent, shown his record, and cautioned to be more careful in the future. An entry is made on his record of this interview, so that the entire record of his transactions with the company is available for any of the officers who may at any time wish to know about it. No man is allowed to see the record of another one, but his own record is open to any man at any time.

"This system has been in effect now for over four years, and has proved to be very satisfactory, both to the employees and to the company. We estimate that previous to the time the change was made, it cost our employees in these classes of service about $20,000 a year for time lost by suspensions; and when the time was served, the employee usually felt that he had paid for his offense and that it should not be counted against him Under the present plan, we simply record the facts, and they speak for themselves.

"At first, we thought the adoption of this plan of discipline might result in laxness, but as far as we are able to determine, it has had the opposite effect; and the number of train miles per accident has increased to about double what it was five years ago, and the number of cases of discipline has actually been reduced."

The style of the records will be understood by the three sample records following, those of Engineman Smith and Conductors Brown and Jones.

Name—A. Smith.

October 1, 1902. Employed as fireman.

November 30, 1908. Promoted to engineer.

December 15, 1908. Suspended 5 days for running into engine 831 with switch engine 94 in ..... yard.

January 3, 1911. Censured for failing to report slight damage between his engine and engine No. 188 at ....., November 30, 1910, and for indifference in answering correspondence in regard to same, he having to be asked three times for statement.

June 1, 1912. Censured for disregard of safety by slightly scorching crown sheet of engine No. 349 on train No. ..... Engine gave up train at ....., 40 miles short of terminal.

*May 17, 1913. Commended for voluntarily firing engine on passenger train No. 391, March 30, from ..... to ..... on account

fireman taken sick, thereby avoiding serious delay to train. He was a passenger on train at the time and fired engine in his good clothes.

December 10, 1913. Instructed on the rules of the Operating Department by Train Rules Examiner.

Name—B. Brown.

September 1, 1903. Employed as brakeman.

May 1, 1907. Reprimanded for breaking pilot beam on engine No. 63 when setting out cars at Brownville on train No. 16, April 30.

March 1, 1909. Reprimanded for damaging waycar when switching at Smithville, February 20.

December 1, 1909. Promoted to conductor.

*January 14, 1912. Commended for quick action taken when, on train No. 98, December .., ..., he noticed that engineer was not shutting off to take siding at Jonesville as had been arranged. He was acting as brakeman, riding on engine, and upon looking across and not seeing engineer, and door on engineer's side being fastened on inside, he climbed over boiler head and shut off and reversed engine and applied air; when it was found that engineer had dropped dead in cab. The train collided with another train which was being made up on main line and, while it was impossible to prevent this, the accident might have been more serious had not brakeman Brown acted as he did.

December 16, 1912. Instructed on the rules of the Operating Department by Train Rules Examiner.

Name—C. Jones.

February 16, 1903. Employed as brakeman.

July 25, 1903. Suspended 10 days for derailment of cars at Botolph's, July 10.

July 1, 1910. Promoted to conductor.

*August 8, 1910. Commended for assistance rendered with other members of crew of his train Extra 881 South, July 18, in extinguishing fire in oat field near mile post 88, between ..... and ....., thereby no doubt preventing considerable damage. He was acting as brakeman.

September 30, 1913. Instructed on the rules of the Operating Department by Train Rules Examiner.

Here, as on the Baltimore & Ohio, there have been found sensitive or suspicious employees who are reluctant to sign a written acknowledgment that they have examined an unfavorable entry which has been made on their records; but there is no contest with such individuals; their statement that they are unwilling to receipt for the paper completes the office record for all practical purposes.

The bulletins which, without giving names, describe accidents and mistakes for which discipline is imposed, and which are posted on the bulletin boards of the division for the information of all trainmen, are, in the case of very serious collisions or derailments, posted on all divisions throughout the system.

CONCLUSIONS

In the nature of the case, the figures cannot tell the whole story of the change that has been accomplished. The spirit of the individual officers and of the individual men is a vital feature affecting success or failure, and this is not so easily diagnosed. In 1909, the cases of discipline of conductors equaled 66 per cent. of the average number of conductors in service. In 1910, this percentage had dropped to 29. This is a great improvement, surely; but 29 is a considerable percentage. The service is far from perfect. This can be said without any derogatory reflection on the Burlington, for 29 per cent. probably is as low a record as would be found on any large road. Assuming that the 66 per cent. of cases probably represented 50 per cent. of the men—some men being disciplined more than once in the year—and that 29 per cent. represented 25 per cent. of the men in service, we have 50 per cent. of the men in 1909 and 75 per cent. in 1913 against whom the superintendent has recorded no serious mistakes whatever. Numbers of the men have clear records for many years. The ideal of every superintendent is to have all his men become as efficient and trustworthy as are the best ones. With things as they are this is impossible. The employing officer must consider questions of permanency, and other non-technical points.

Contending with the various drawbacks, the superintendent who can maintain efficient service and not be obliged to call more than one-fourth of his freight conductors into the office in 12 months, may properly be called fortunate.

*These favorable entries are written in red ink.

The general attitude of the employees is well indicated by the request of the yardmen, before mentioned, that they be admitted to the benefits of the new scheme. This request was three years in coming; but a well defined and intelligent sentiment on the part of the men is a thing of slow growth. This is not surprising, for individuals may go many months without coming into personal contact with any actual case of discipline which will really arouse interested thought on the subject; while opinions formed at second hand or from statements made in lodge meetings are not always to be trusted; they may be superficial. The attitude of the men is also indicated by their improved standing as estimated by the officers. Superintendents say that men are more frank and honest. Those who, when called to account for errors, or when required to testify concerning misconduct of others, are disposed to be evasive or tricky, have learned to take an honorable course. This is the result which would naturally be expected from the more rational methods of the non-suspending discipline; but it has been hard for old school railroad officers to believe that it could be the actual result. Now, seeing is believing.

Another result, which cannot be other than good, is that the committees representing the employees are more active in remonstrating against every decision of the superintendents concerning which they believe they have any grounds for complaint. In short, the real nature of corrective discipline is appreciated, and the old idea that a serious loss of pay always squared all accounts with the company has disappeared.

The new system has educated the officers also. Some of them, perhaps the majority, went into it with small hopes of succeeding; but they carried out their new principles loyally, and they have succeeded. This again is only a natural result. A suspension is an easy method, oftentimes, of avoiding the tedious study of a case which is necessary if the officer is going to take the responsibility of keeping the erring employee in the service. It is not a logical method, but it has been so used. Being deprived of this makeshift, the officer takes the rational course, with corresponding improvement. This education of the officers has taken a considerable time as may be seen by the figures in the eighth column of Table A; not until the third year was success assured. It would appear from the figures that the really incorrigible men had by that time been pretty well disposed of. Moreover, the "grievers" have at last become convinced that they cannot get discharged men restored to the service except on substantial evidence that the superintendent has made a mistake.

On the whole, therefore, we may say that the results of rational and humane discipline on the Burlington road have been in every way good, and that these results are definite and visible. There is no claim to perfection, and, with the proverbial railroad cautiousness, the officers speak of their successes always in a moderate and conservative tone; but the successes, nevertheless, are ground for congratulation. And commendation would be due for the effort alone, even if the success were not so plainly evident; for to do everything practicable towards the abolition of suspensions is, in the language of the sociologists, a social duty.

ELECTRIFICATION OF RAILWAYS IN PRUSSIA.—Experimental operation of the electrified Lauban-Königszelt line of the Prussian-Hessian State Railways in Silesia is now under way. On March 14 the 80,000-volt transmission from the power station at Mittelsteine to the sub-station at Niedersalzbrunn was connected up electrically for the first time. During the two weeks following the transformers, oil switches and other apparatus were "baked out" as a preliminary to the opening of service on April 1 between Niedersalzbrunn and Bad Salzbrunn. Trial trips have also been made on the section between Niedersalzbrunn and Conradstahl. The tests are being conducted with a triplet type of articulated car, the center body of which carries a pair of pantograph collectors. In a special trial on April 7, this triple unit hauled two steam-type trailers.

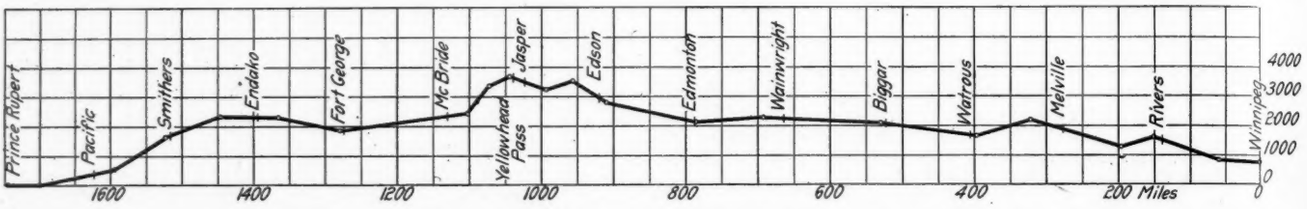
Construction of the Grand Trunk Pacific Railway

Second Article on Canada's New Low-Grade Transcontinental Line, Covering the Section West of Winnipeg

By F. M. Patterson

Politics, using the word in its broader sense as meaning policies of state, or in its narrower and more degraded signification, whereby politicians are differentiated from statesmen, have been of potent influence in shaping the railway maps of North America, and the contrasts between the histories of the Canadian railways and those of the United States may largely be ascribed to the contrasts of statecraft, due to the fundamental differences of their governments.

With this in mind it is interesting to note that the Grand Trunk railway, which claimed and was denied the privilege of building the trans-Canadian route which became the Canadian Pacific, is now completing with the aid of the Dominion government a line from the Atlantic to the Pacific with gradients of 0.4 per cent. against westbound traffic (except that on the western prairies, where it is expected that the bulk of traffic will be eastbound a grade of 0.5 per cent. has been adopted) and of the same rate against eastbound traffic, except for a helper grade of 1 per cent., 20 miles long, ascending the western slope of Yellowhead pass in the Rocky mountains.



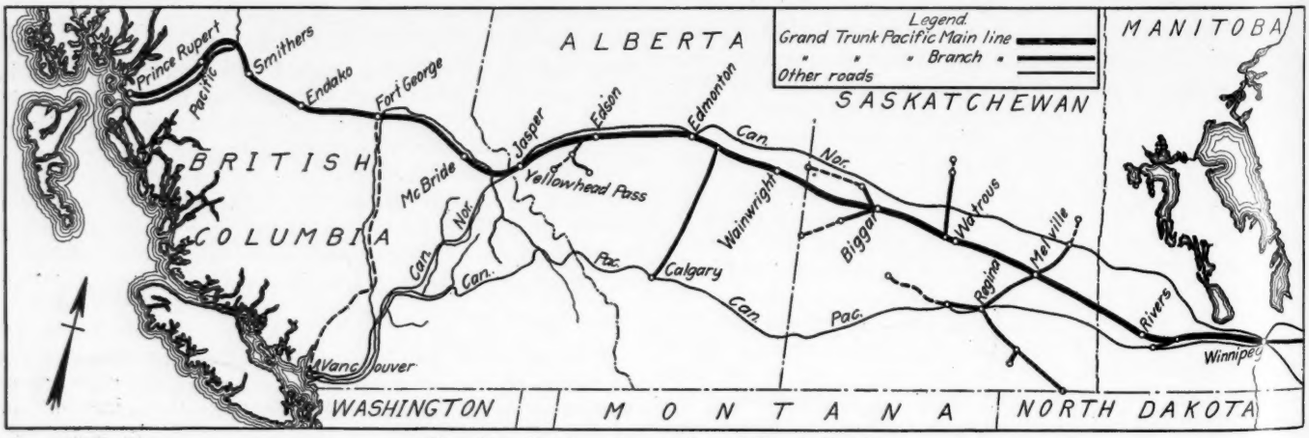
Profile of Grand Trunk Pacific Main Line from Winnipeg to Prince Ruppert

East of Winnipeg the railway is known as the National Transcontinental, and is being built by the Canadian government. On its completion it will be leased to the Grand Trunk Pacific for a term of 50 years with certain provisions regarding a renewal of the lease for a further term of 50 years. West of Winnipeg the main line is built and owned by the Grand Trunk Pacific Railway Company, and the branches are constructed by a subsidiary incorporated as the Grand Trunk Pacific Branch Lines Company with capital stocks of $45,000,000 and $50,000,000 respectively.

To illustrate the change of policies in a single generation it is of interest to compare the aid extended by the government in this case with that tendered the Canadian Pacific. Fundamentally the controlling ideas were the same; a railway from coast to coast, wholly within Canadian territory and controlled by a Canadian corporation; but in detail the plans differed widely. In the case of the older road several links in the line were built by the Dominion or provincial governments and donated outright, while the credit of the government was loaned in some instances by guarantees of interest on bonds, but the principal aid consisted of cash subsidies and land grants, the latter an asset not particularly lively at the time, but one that now is of remarkable value to the grantee.

In the case of the Grand Trunk Pacific, the Dominion government, while ready to aid liberally was strongly opposed to direct cash or land subsidies, but extended its credit by guaranteeing the bonds for a large proportion of the cost of construction and has done this in a way liberal to the railway while safeguarding its own interests. The only exception to this is the branch line northwesterly from Fort William and Port Arthur to a connection with the National Transcontinental, which is being built by the Grand Trunk Pacific, and received from the Dominion government a cash subsidy of $6,000 a mile, as well as a subsidy of $2,000 per mile, and 6.4 acres of land per mile from the provincial government of Ontario.

West of Winnipeg the line traverses the prairie country to Wolf creek, Alberta, a distance of 916 miles, this portion of the line being known as the Prairie section, while the remaining 840 miles from Wolf creek to Prince Rupert is known as the Mountain section. On the Prairie section the government guarantees the interest and principal of 3 per cent. first mortgage bonds for 50 years to the extent of $13,000 per mile, while on the mountain section the government's guarantee will extend to three-fourths of the cost of construction, the remainder of the cost of construction being provided for by an issue of 4 per cent. mortgage bonds guaranteed principal and interest by the Grand Trunk Railway of Canada, and as a further guarantee to the

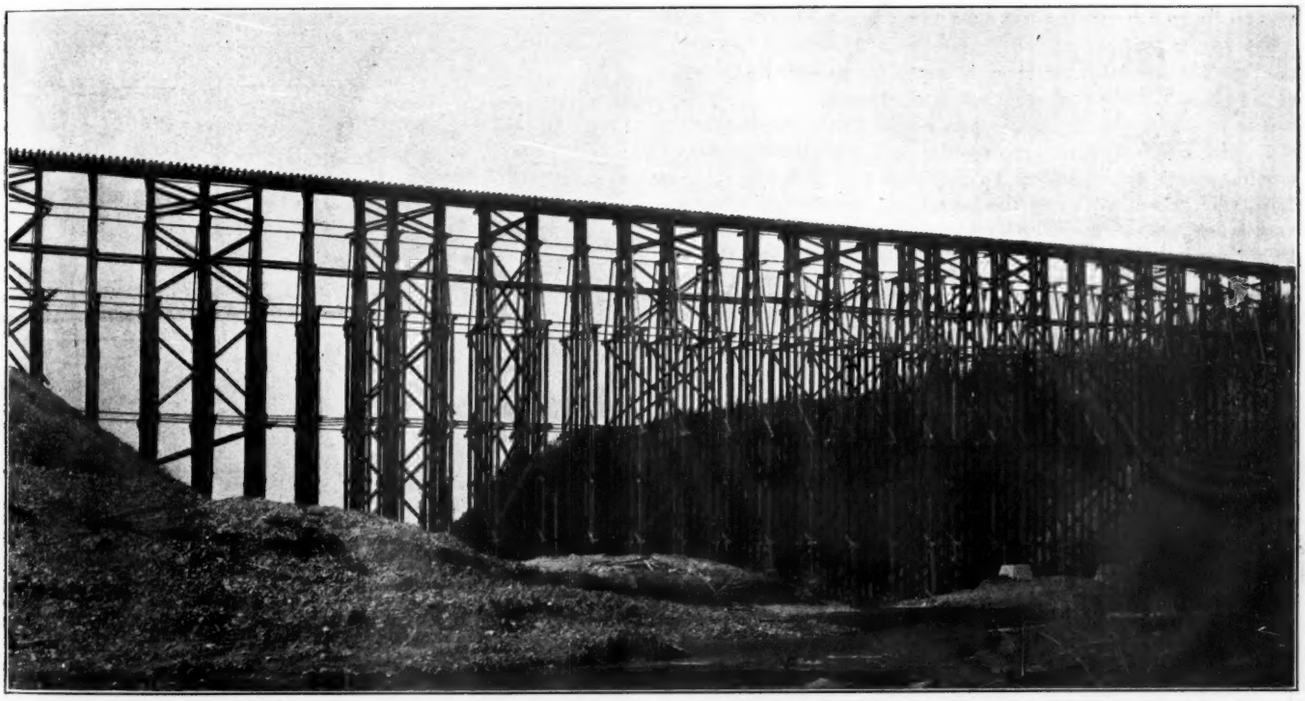


Map Showing Location of Grand Trunk Pacific

government the Grand Trunk Railway is obligated to retain a majority of Grand Trunk Pacific Railway Company's stock during the life of the agreements with the government.

The financing of the project having been perfected little time was lost in starting construction, although it must not be inferred that the route was chosen without careful investigation. Indeed it is probable that the location of no line on the American continent, and certainly none of such magnitude, has received as careful study as that of the Grand Trunk Pacific, and the result is a masterpiece of engineering, not so much in the massive work that impresses the lay mind as in the avoidance of such work, while securing alinement and gradients that would be considered creditable in a prairie country. It is to be hoped that the details of this study may be made public, as it will form a most valuable contribution to our knowledge of the economics of railway location.

The construction of the road from Winnipeg to Edmonton presented no great difficulties except in the way of bridging some of the streams. The rivers of the western prairies of Canada, while not large in themselves, usually flow through



The Wolf's Creek Trestle at the Beginning of the Mountain Section

eroded valleys from 3,000 ft. to a mile in width, and from 100 to 200 ft. in depth with slopes falling precipitously from the level of the prairie. The same general design of tower and girder construction was adopted for all such crossings, with deck truss spans over the streams, and the principal drawback was the delay to track during their construction. The Battle river viaduct west of Wainwright is the principal one of these crossings, being 1.25 miles long and 185 ft. high. While the line passed through an unsettled country it was within reasonable access of existing railways and little difficulty was experienced in hauling outfits and material over the prairies in advance of the track, except in the spring, when the frost was coming out of the ground.

West of Wolf creek conditions were different and trestling was resorted to in order to delay the track as little as possible, the trestle over Wolf creek being shown in one of the illustrations. From this point to Tete Jaune Cache, a distance of about 180 miles, the country presented more difficulties in transporting material ahead of the track and a large amount of money was expended in constructing a "tote road" for the purpose of distributing men, tools and supplies along the work. At the same time a telephone line was installed connecting the various camps with the western end of the telegraph line. Tete Jaune Cache is at the head of navigation of the Fraser river, and by means of this road it was possible to establish camps and begin construction on the 180 mile stretch between that point and Fort George. The men and some of the supplies were sent down the river by steamer, but the greater amount of supplies went forward on scows, floating with the current and steered by sweeps, very similar to the flat boats of the early Mississippi river trade.

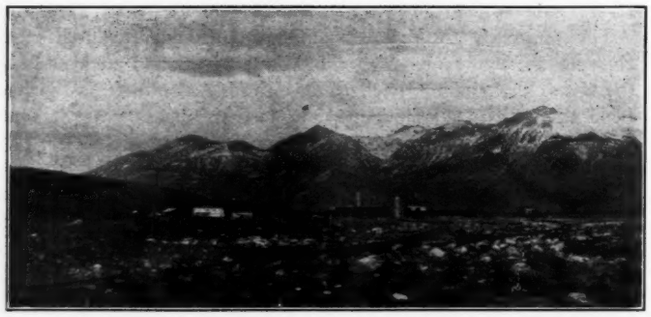
The approach to Yellowhead Pass is along the Athabasca river to its confluence with the Miette river, and thence along the latter to the summit where an altitude of 3,718 ft. is reached 1,045 miles west of Winnipeg. The pass throughout on the eastern slope is of good width, and the necessary work is remarkably light for mountain construction.

For a distance of almost 30 miles west of the summit the pass is from one-half mile to a mile in width, and the line lies on the northerly side of Yellowhead and Moose lake, whose outlet is Fraser river. Shortly after leaving Moose lake the Fraser plunges sharply through a narrow defile while the railway is forced to cling to the rocky sides of the mountain for support and to adopt a 1 per cent. grade, compensated for curvature, for a distance of about 20 miles to a point near Tete Jaune. This will be operated as a pusher grade.

It is a remarkable fact that Yellowhead Pass, one of the lowest passes in the Rocky mountains and the most favorable for railway construction, as well as the one longest known to civilized man should be the last to be adopted as the route for a trans-mountain railway, and by a coincidence that it should be utilized by two different railways at the same time. The Canadian Northern railway's trans-Canadian line from Montreal to Vancouver is located along the southern side of this pass and there is little trouble finding room for both except at two places west of the summit. For some distance along Moose Lake it was necessary to build along the edge of the water adjacent to the Grand Trunk Pacific track and again west of Moose lake, where the Canadian Northern is on the side hill above the Grand Trunk Pacific, and it was necessary to tunnel, the work was attacked by lateral drifts, and the muck wasted through these drifts and across the Grand Trunk Pacific track by means of chutes above the clearance elevations.

As soon as traffic was opened to Tete Jaune construction on

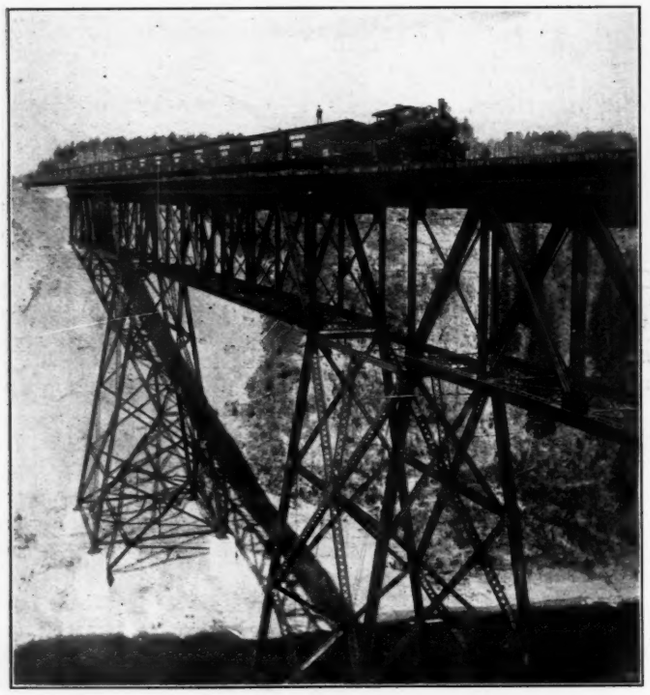
the line to Fort George was pushed vigorously. The Fraser follows a tortuous course, the distance by river from Tete Jaune being about 320 miles against 180 miles by the located line, but the railway in most places is within easy access from the river, the greatest diversion being about 22 miles. When one considers that the alternative is a journey of 330 miles overland from Ashcroft on the Canadian Pacific to Fort George the ad-



Jasper, B. C., a Division Point 17 Miles East of Yellowhead Pass

vantage furnished by the river is apparent, though its qualities as a navigable stream leave much to be desired.

The rate of progress on this part of the line is contingent on the time necessary for erecting the bridges. The Fraser is crossed several times, and as it is impossible to trestle or to erect false work much ahead of the arrival of the steel, it is necessary when one of these crossings is reached to suspend track laying until the spans are erected. In November, 1913, the line



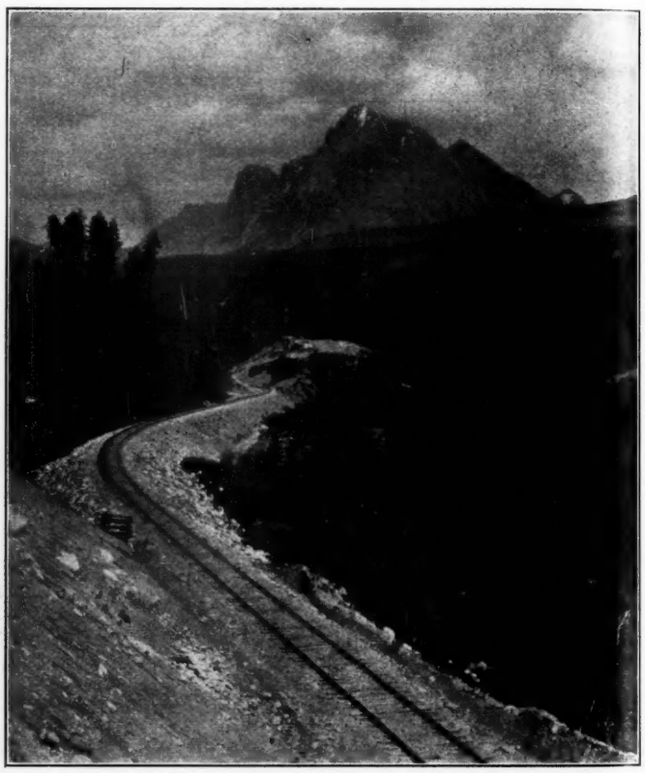
Pembina River Bridge West of Edmonton

was opened for traffic to the second crossing of the Fraser, about 100 miles west of Tete Jaune, leaving a gap of about 250 miles between that point and the end of track advancing from the west.

At Fort George the Fraser makes an abrupt bend to the south to find its way to the Pacific ocean near Vancouver, and a branch line is now under construction to give the Grand Trunk Pacific access to this port. The main line continuing west from Fort George traverses the Nechacho river along easy country to Fort Fraser at an altitude of 2,230 ft., where it leaves the river and shortly after enters the Endako valley similar in character to that of the Nechacho. Further on it begins the ascent of Bulkely summit, which attains an altitude of 2,366 ft., 170 miles west of Fort George. From the summit westward Bulkely river is followed until the Skeena river is reached near Hazelton. Shortly before reaching the Skeena river mountainous country is encountered and the line is carried by side hill work on the rocky cliffs of the river. It is here that the longest tunnel on the line is found with a length of about 2,000 ft.

The Skeena is bridged at a favorable site about 16 miles below Hazelton, and the line follows the river thence to its terminus at Prince Rupert. Westward from Hazelton for a distance of 77 miles to Kitselas canyon the route is rough but does not require exceptionally heavy work. The 100 miles from Kitselas canyon to Prince Rupert comprises the heaviest work on the entire line, as the topography of the country necessitated a location along the side of the river involving heavy side hill excavation in rock.

Construction eastward from Prince Rupert was begun as soon as the location was adopted, advantage being taken of the



Grand Trunk Pacific Tracks Near Yellowhead Lake with Mount Fitz William in the Distance

Skeena river for getting outfits and material to the front. In November, 1913, the line was in operation to Rose lake, a distance of 300 miles from Prince Rupert, and it is expected that the track laying will be completed some time during the spring of 1914.

A glance at the map will show a remarkably direct line between the termini of the road, the only points of considerable diversion being at Yellowhead, where it was necessary to swing to the south, and at Hazelton where the line is carried to the north. A survey was made westerly from near Smithers to Kitselas canyon, crossing the Skeena at the latter point, which would have effected a saving in distance of about 40 miles. The steep gradients and sharp curvature which that route required, as well as the presence of a large area of county to the north tributary to Hazelton, favored the present line.

The result of the selection of Prince Rupert, about 30 miles south of the Alaskan boundary, as a port and the terminus of a transcontinental railway will be awaited with interest by traffic men and students of industrial and commercial economics, for

it has become almost an axiom that a railway cannot successfully create a new port out of hand in opposition to those already established. The railway will spare no effort to make it a success, for both transatlantic and trans-Pacific steamer lines will be operated when the road is completed, as well as the line of coast steamers now in service between Prince Rupert, Vancouver, Victoria and Seattle. For the Orient it has the advantage of saving some 500 miles of ocean voyage. The harbor is excellent and the climate is mild, despite the latitude, on account of the warm current of the Pacific.

However, the success of the undertaking will not depend wholly on the business it may wrest from any other port, for it will serve an agricultural country between Winnipeg and Edmonton that is not now oversupplied with railways and that should furnish plenty of traffic when it has been developed. From Edmonton to the Rocky mountains it will have only one rival, the Canadian Northern, and from the mountains to the Pacific it will open up a country now without railways, rich in timber, and which is said to be extremely fertile and well adapted to agriculture and fruit raising. At its western end the fisheries will furnish considerable traffic. Coal is now being mined on the line in the Rocky mountains, and it is expected that a large tonnage may be developed from the mines. Passenger traffic is expected to be satisfactory, owing to the influx of settlers, while the magnificent scenery in the mountains, together with the opportunities offered for fishing and hunting, will doubtless develop a large tourist business.

One feature of Canadian railways that stands out in contrast with practice in "the States" is their activity in operations that south of the border are usually relegated to outside corporations. Thus we see there each large railway owning, either directly or by stock holdings, sleeping cars, steamer lines, telegraph, express and hotels, carrying out the theory that their function is not merely to furnish transportation, but to supply the traveler's incidental needs en route. It may be added that they attend to these matters well and that the public is well served, while the railways keep the profits that would otherwise be lost to them. In line with this policy the Grand Trunk Pacific operates its own sleeping cars, express and telegraph, and as has been said will establish steamer lines on the Atlantic and Pacific oceans, as well as on the Great Lakes. Hotels will be erected in the principal towns as well as at a number of points in the mountains that are sure to be attractive to the tourist. The Fort Garry hotel at Winnipeg has just been completed and the illustration will show the class of structures the railway is erecting.

The Grand Trunk Pacific Development Company, whose capital stock is owned by the railway company, has acquired land for all of the townsites along the line and is thus able to sell the lots with suitable restrictions as to the class of buildings to be erected. Conditions are also imposed to prevent the most desirable property being bought up by speculators.

The road has been built to high standards and that portion in operation is in good physical condition. An annexed table gives the lengths and other operating characteristics of each engine stage. It will be noted that there is more variation in these lengths than one would expect to find on a road of such uniform grade line in an unsettled prairie country, and this is explained by the fact that the available water supply was one of the most important factors in determining the location of the engine terminals.

The general contractors for the work are Foley Brothers, Welch & Stewart, who have successfully handled an undertaking requiring good judgment, high executive ability and large financial resources. The camps are well maintained and a noteworthy feature in the mountains is the log cabins erected to house the men.

Acknowledgment is cheerfully made of the courtesy of all the employees with whom the writer came in contact, and especial thanks are due to George W. Caye, assistant to vice-president and general manager, and to B. B. Kelliher, chief engineer, for information regarding this work.

RAILWAY COMPETITION AND COMBINATION*

BY LOGAN G. MCPHERSON

Lecturer on Transportation at the Johns Hopkins University

The era of unrestrained competition in business meant each man for himself and the devil take the hindmost. Collectivism means pulling together instead of pulling apart.

As excess in any direction is injurious, evils may be brought about by unrestrained competition; they were conspicuously exemplified in the period of industrial depression that succeeded the panic of 1893. That evils may follow in the train of unrestrained combination has been manifest during the period of prosperity that was under way at the beginning of the century.

The problem is to bring about that condition under which there will be retained the stimulus that competition gives to enterprise without the excesses that emerge when there is lack of restraint; and to obtain the benefit of production made possible by large scale enterprises without the evils inherent in unregulated combination.

The evils of unrestrained competition and of unregulated combination, and manifestations of an undefined and uncomprehended transition from competition to combination have been clearly perceptible in the transportation industry of which by far the most important agency in the United States is the railroad. It will serve a useful purpose to follow the successive steps in this course.

Although the railways had not from the beginning been accorded by law the full degree of freedom allowed to private enterprise, they enjoyed in practice such freedom to so great a degree that their development which led to government regulation is not without analogy in the development in other fields of business enterprise for which governmental regulation has of recent years been proposed.

In accordance with that theory of competition under which business in the United States was first established and under which it was encouraged to develop it came to be expected that through the multiplication of railways competition would be established between them, that this would insure fair charges and good service.

Competition is most vigorous where there is the greatest inducement. It was between the centers of industry and commerce whose situation had been determined before there were railways that there was the greatest volume of traffic. As the railways extended, it came to be that there were hardly any two of these centers that were not connected by two or more competing lines. As the traffic which moved in large volume between such centers offered the largest reward to the competitors, it was for such traffic that there was the greatest competition. Therefore, in the struggle lower relative rates were accorded such traffic than to other traffic not so strongly competitive.

Business enterprises of all kinds developed at these cities, and the most efficient came to be the larger shippers and the larger receivers of materials and merchandise. Therefore, the competing railways made the most strenuous exertion to obtain the traffic controlled by these larger shippers. In the unrestrained competitive struggle lower rates and greater concessions were made to such shippers than to their competitors, who did not originate traffic in such large volume.

Competition for such traffic led to the cutting of rates, granting of rebates, the making of different rates to different shippers, the sudden changing of rates, the issue of free passes as a consideration to obtain traffic, and other practices that have been widely ventilated. The railroads not only resorted to such practices on their own initiative, but such concessions were forced by shippers who played one railroad against another, the opportunities for such bargaining becoming the greater as the number of railways connecting the traffic centers increased.

With the great expansion in railway construction after the close of the civil war, when railways were built in advance of

*A lecture delivered at the Johns Hopkins University.

the traffic of the times, the competition between these railways became most intense.

Competition always implies inequality between the competitors. To the strong, to the swift, to the energetic, and the far-sighted, and even to the shrewd and the cunning, falls the prize. It was the theory of competition that the weak should fall by the wayside; that a man who could not succeed in a particular business or a particular vocation would be driven out of that business and the field left to his more capable competitors. If a farmer did not prosper by raising wheat he could raise corn; if a store for the sale of shoes were not profitable it could be utilized for the sale of hardware or groceries.

In a mill or a factory, however, in which there has been a large investment in machinery for a certain kind of manufacture, failure usually means a loss of at least a considerable portion of the capital so invested and therefore there is a long struggle before the mill or factory is dismantled. In the case of a railroad this situation is intensified; indeed, it is impossible that a railroad be turned to any other use than that of a railroad. In case of bankruptcy the track is not torn up, the stations are not torn down, the locomotives and cars are not disposed of. They must continue to be operated; and, since in case of bankruptcy, no return need be paid on capital, the bankrupt railroad, under unrestrained competition, could make lower rates than a competing solvent railroad and thus might drag the solvent railroad into bankruptcy.

Now during this era of unrestrained competition only a part of the railroads were prosperous; that is, only a part of them adequately maintained and improved their track and equipment, met their capital obligations and paid dividends. Competition had become warfare; business of that day was warfare. Rival railroads were at war and railroads and shippers were each trying to get the better of one another. The railways were fighting for life, for the sustenance which maintains life. Shippers were struggling for the lowest rates they could obtain and individually had little regard for the prosperity of the railroads. The fact that during this period there were more railways than were needed made more bitter the competition between redundant railways and led to bankruptcies and reorganizations. Investors lost heavily. Their losses made other investors chary, and greatly increased the difficulty of raising money for extensions, improvements and such new railway construction as was necessary in the less developed parts of the country.

It was but natural that the railway companies themselves should seek to remedy these disastrous conditions by their own efforts. At various times railway presidents would enter into agreements not to cut rates, not to give rebates, not to issue passes to secure traffic. But these agreements were quickly swept away in the struggle to obtain business; the pressure of the shippers who controlled large volumes of traffic did not relax.

As simple agreements were without avail, the railways entered into compacts providing for pecuniary forfeits on the part of any railway party thereto that should cut rates, give rebates, or issue passes to obtain business. Such transgressions were often difficult of proof and one and another of the railways were prone to continue them, taking the risk of being caught and paying the forfeit.

Then still more binding agreements were made. Such were the pools in which competitive traffic was awarded in agreed percentages between competing lines, the intent being to accord to each at tariff rates the proportion of the traffic that it might be able to secure under unrestrained competition. Pooling agreements, however, were beset with two difficulties: First, it was always exceedingly difficult to satisfy all of the competing lines with the proportion of traffic respectively awarded them. But equilibrium in this respect was gradually being reached and perhaps would finally have been attained were it not for the second and greater obstacle of public opinion.

Although the people of the country in general were well aware of the plight into which unrestrained competition had brought the railways and the unevenness with which this competition bore upon the shippers, they resented traffic agreements and pools as attempts to suppress that competition which was regarded as the fundamental principle of business. Although the people were quite aware that unrestrained competition between the railways had led to serious irregularities and inequalities in the rates at which traffic was actually carried, there was wide popular agitation when the railways resorted to the only method available to them to endeavor to bring order out of chaos. This agitation was fomented in large degree by the shippers who craved cut rates, rebates and passes.

Popular discontent and popular agitation led to the governmental regulation of the railways in which there has been rapid advance, but in which the country has not as yet found its bearings.

It is to be noted that under governmental regulation not only are there no longer rebates and cut rates and passes to shippers to influence traffic, but that competition between the railways as to rates has virtually stopped. The Interstate Commerce Commission and the state legislatures and railroad commissions have made many reductions in rates and have granted some advances, but the making of competitive rates by one railway independent of the rates made by another competing railway has practically come to an end. When they desire to advance rates competing railways join in requesting permission of the Interstate Commerce Commission or a state railroad commission to do so. When they desire to reduce rates competing railways join in filing the new tariffs. Therefore, in so far as rates for competitive traffic are concerned governmental regulation has brought about a condition in many respects similar to that which the railways sought through traffic agreements and pools.

That is, in so far as rates are concerned, the effect that was sought by the railways through combination has been in large measure attained through the action of the people who sought to prevent the railways themselves from attaining that end.

This does not mean that rates in all cases under this combination of the public are what they would have been under a combination of the railways. The strenuous efforts that are now being made to obtain an advance in freight rates is sufficient indication that the level of rates would be higher than it now is if rates could have been advanced by the railways without appeal to the regulating bodies.

There is, however, another phase of rate-making under the combination of the public which is quite as reprehensible as any ever engaged in by the railways themselves. To be sure, the Interstate Commerce Commission exercises a broad supervision over the interstate rates throughout the entire country. The different states, however, have authority over the rates for traffic that moves between their respective state limits. Many of these states compel the railroads to observe schedules of intrastate rates that are fixed primarily for the purpose of giving the shippers of the respective states an advantage over competing shippers of other states.

During the era of unrestrained competition the railways gave large shippers lower rates than were accorded to small shippers, but these lower rates were made to obtain large volumes of traffic. To the extent that such rates facilitate the movement of traffic in large volume throughout the United States it may perhaps be claimed that while they worked to the disadvantage of the small shippers they promoted the commerce of the country as a whole. But a state that compels a railroad to adopt rates that serve to give an advantage to the shippers of that state has no such justification. It is not furthering the extension of the commerce of the nation, but in reality is violating that provision of the Constitution which provides that there shall be no restriction upon commerce between the states.

There remains to consider in what respects there is still competition between the railways, in what respects that competition is beneficial or harmful to the business of the country.

Competing railways now vie with each other in providing

faster service, and better service for competitive traffic. As the greater volume of such traffic is still between the principal centers of industry and commerce, more trains and faster trains are run between those centers. Quick service is a desideratum, but when it is maintained for competitive traffic under conditions that interfere with the satisfactory movement of other traffic the total effect is undesirable. And then again expense of service increases at a far greater ratio than the speed of service, and therefore competing service when forced at an undue pace compels expenditure out of all proportion to the revenue from the traffic thus carried.

Competition for passenger traffic between these large centers has brought about the running of fast trains and an excessive number of fast trains that are adjusted to the needs of the through travel. To an extent they serve the needs of passengers from and to intermediate stations, but the result in many parts of the country is an excessive through-passenger service and a more or less inadequate way service.

There are other ways in which competition between railways, and especially those serving the same geographical or commercial district, militates against the best service. The distribution of cars and locomotives to where they are needed and as they are needed could be effected more speedily and satisfactorily and with greater economy than under present conditions, which sometimes bring about a surplus of equipment in one place while there is lack in another.

The terminal yards, industrial and other tracks, especially in the larger cities, could be more effectively used for the common good were they under the administration of one company. As it is now, an industry on the line of one railroad in a large city frequently has to pay switching charges on freight cars consigned to it over the lines of another and competing company. This handicaps the shippers whose plants are situated upon a competing line.

During the regime of unrestrained competition there developed a tendency on the part of the railway lines to coalesce to the end of diminishing competition and forwarding co-operation. That is, the tendency forced upon the railways by unrestrained competition and in accordance with which they were endeavoring to work of their own volition was away from pulling apart and toward pulling together. There was not only combination to maintain rates, but advance in that physical combination by means of which can be given more satisfactory and more economical service.

There was first the combination of short, separate and connecting lines into continuous routes leading to obvious advantages in the way of more expeditious and more economical service. Then there was the amalgamation of branch lines with main lines, facilitating the flow of traffic. Then there was the amalgamation of competing lines. There is probably not a principal railway system in the country that is not made up in great part of what were originally short local roads, some of them connecting and others to a greater or less extent competing. Indeed, each of many systems is now made up of as many as thirty or forty or even more of what were originally short local lines. The advantages of such amalgamation consist in the better distribution and utilization of equipment to meet the industrial and commercial needs of the region served; and in the fact that conferences are no longer necessary between the managers of several different and independent railways when it is desired to arrange schedules and other facilities for the movement of through traffic. Such matters are better adjusted by centralized authority having full information as to the needs of the entire territory.

Such combinations and amalgamations extended until in each of the great geographical divisions of the United States by far the greater number of the railways had come to be part of one or another great railway system. In line with this tendency came the combination of the great systems themselves. This tendency received its greatest impetus at the time when the tendency toward combination throughout the field of industry and commerce had become os marked as to arouse an antagonistic public sentiment which also came to be directed against the railway combinations. Combination or partial combination proceeded in different ways. There was the purchase or lease of one railroad by another; the purchase by one railroad of enough of the stock of another to secure a controlling interest in its administration, and there was the device known as the holding company, having such large proprietary interests in two or more companies as to give it the control of their administration. So much of the popular antagonism has been against the financial methods by which amalgamation or partial combination has been effected that the advantages of such combination under equitable financial procedure have been lost to sight. It is quite true that at times prosperous railway systems have been burdened with weak lines unloaded upon them under iniquitous terms for personal profit, and certain holding companies have been organized solely to serve selfish ends. The revelation of such practices may for a time obscure but it cannot set aside the fact that the principle of railway combination when equitably applied results in benefits that inure to the common good.

In other respects there has been a development of the railways in the way of pulling together. When a shipment of freight was first carried over the lines of more than one railroad company the division of the transportation charge and the allocation of the responsibility for loss or damage between the various lines was a cumbersome process. Through the years there has developed a mechanism of bills of lading, waybilling, interline accounting and adjustment through which such shipments are recorded and the charges adjusted with a maximum of accuracy and minimum of intricacy; and an equally satisfactory mechanism through which similar service is performed for passenger traffic. Various associations of railway officers are continually considering improvements in practice and procedure of all kinds by means of which the operations of the railways have attained a homogeneity and uniformity that could only have been brought about through such experience as has attended their development and led to such co-operation.

The freight cars of one railroad can now be consigned with through shipments over every other railroad in the United States. Indeed, the common use of freight cars has so increased that there has seriously been considered the pooling of all the freight cars in the United States under common ownership.

In still another respect railways have been learning to pull together. In the era of unrestrained competition competing railway companies often built lines for their respective exclusive use that were virtually parallel for considerable distances, especially when approaching a large industrial or commercial center. Such competitive construction was often an economic waste in that there was not sufficient traffic to justify the duplication. Of recent years railways have come in many such cases to use the same tracks under rental, joint trackage agreements or other arrangements that give adequate facilities to each company without entailing the waste of duplicate construction.

During the era of unrestrained competition a large and expensive soliciting force maintained by each principal competitive railway exerted a considerable part of its efforts in the endeavor to take traffic from another line over which it could as well be carried. So far as the efforts of a soliciting force are directed to this end its maintenance is an economic waste. In recent years the efforts of the traffic officials have more and more been directed toward increasing the volume of traffic of their respective lines by the endeavor to develop new traffic. Many of the companies have established industrial departments for the purpose of inducing manufacturers to establish plants at suitable places along their lines. Many of the companies have run agricultural demonstration trains with lecturers and some of them have established farm improvement departments to demonstrate to the farmers how best to rotate their crops and increase crop production by scientific methods. These departments also co-operate with the manufacturers and the farmers toward extending their markets.

During the period of unrestrained competition the railways maintained, or at least sought to maintain, secrecy as to their

negotiations with shippers. For obvious reasons the agent of a railroad did not divulge to the agent of a rival railroad what traffic a competitive shipper was sending over his lines. At this time of established, published and maintained rates traffic tends in greater degree to move over the line logically adapted to carry it. The agents of competing railways in even the largest cities know pretty well what traffic is moving over the respective lines. Therefore has come about in many cities the formation of local freight agents' associations which discuss matters of common interest and not infrequently make adjustments as to the handling of traffic that benefit not only the railways but the business of the community.

A powerful factor in leading railways that once were bitterly competitive to pull together is the pressure brought to bear upon them by combinations among those with whom they have intercourse. A great industrial combination with plants in different parts of the country and controlling the shipment of a large volume of traffic can dictate unduly burdensome conditions of service when it bargains separately with each of a number of competing railways. Only by railway combination can the power of such industrial combinations be met.

Not many years ago the wages and working conditions of its employees were determined by each railway company for itself in negotiation with its employees. With the growth in the membership and strength of the railway brotherhoods it has come about that their officers enter into negotiations not only with an individual railway, but with all the railways that serve a common territory. This has brought about the common action of such railways in negotiations with the brotherhoods. It is becoming more and more the tendency for these combinations of the employees and the railways in combination to have their differences arbitrated by a public tribunal.

The most extended and strongest combination which has brought pressure to bear upon the railroads is that of the public in general acting through the federal and state legislature and the federal and state commissions. There is a perceptible tendency on the part of the regulating authorities to regard the railways somewhat less in the light of separate corporate entities and more in the light of servants in common of the public in common. In preparing information requested by these various bodies and in discussing various proposals emanating from them the railways are coming more and more to act in common and often through common agencies. For example, in formulating the system of accounts which the railways now observe, the Interstate Commerce Commission held repeated and prolonged conferences with the Association of Railway Accounting Officers which acted on behalf of the railways in general.

In so far as the convenience and economy and the general efficiency of physical operation are concerned there is no sound argument that can be advanced against the combination of railroads and serve a common territory, provided there are efficient safeguards against the abuses that are latent in such combination when unregulated.

Under the present status of governmental regulation, if there is any tendency on the part of such a combination to provide insufficient facilities or in other respects not properly to fulfil its functions the public authorities have full power to investigate and to remedy. The advantages of allowing the respective traffic regions of their countries to be served each by one principal railway system were recognized by France at the very beginning of the construction of its railways; they came to be recognized by England after but a few decades of railway development, and the advisability of sanctioning further amalgamation is now being discussed in that country.

That this is the true economic status is evidenced by the tendency in this direction forced upon the railways of the United States by the economic pressure to which they were subjected. It would follow that under proper governmental supervision and regulation it can also be made the most efficient and the most economical status. The sanction of this tendency by the people of the United States would be no more than to help bring about that condition under which, instead of pulling against each other with the resultant evils of unrestrained competition, the railways would be pulling together for the benefit, not only of their operation, but of their security holders and of the people of whose institutions they are a part.

It would seem that the practical as well as the theoretical considerations are all in favor of such combinations of railways as will enable them best to serve the needs of industry and commerce, most efficiently and economically to perform the function of transportation, most satisfactorily to adjust the questions that arise with shippers, with railway brotherhoods and with governmental legislative and regulatory bodies.

It doubtless would be that the concentration of the administration of all the railways of the country would be unwieldy because of the magnitude of the interests and their diversity. The concentration of administration of all of the railways of a particular traffic region does not offer such difficulties. Such combination would be a step in economic progress.

STEEL PASSENGER TRAIN EQUIPMENT

The Special Committee on Relations of Railway Operation to Legislation has published bulletin No. 60 on steel and steel underframe passenger train equipment, calling attention to the following:

Seven bills are pending in Congress requiring the replacement of wooden passenger train equipment in steel. The periods suggested during which this is to be done vary from January 1, 1915, to ten years from enactment of the law; in some cases with extensions of time in the discretion of the Interstate Commerce Commission.

Three bills are pending which, among other things, leave to the discretion of the Interstate Commerce Commission the operating conditions under which wooden cars must be replaced with steel equipment, and the time for such replacement.

Circular No. 53, sent out by the committee January 2, 1914, was replied to by 227 companies operating 236,720 miles in the United States. The following is a summary of the replies:

Steel and Steel Underframe Passenger Train Equipment in the United States

	Steel	Steel underframe	Wood	Total
In service December 31, 1913.....	9,492	4,608	44,560	58,660
Contracted for December 31, 1913..	2,734	395	15	3,144
Acquired in calendar year 1913....	2,111	1,019	220	3,350
Acquired in calendar year 1912....	1,829	555	276	2,660
Acquired in calendar year 1911....	2,214	763	779	3,756
Acquired in calendar year 1910....	2,016	538	1,084	3,638
Acquired in calendar year 1909....	488	425	967	1,880

The rapid increase in steel and steel underframe cars is shown below:

Approximately in service	Steel	Steel underframe
January 1, 1909.....	629	673
January 1, 1910.....	1,117	1,098
January 1, 1911.....	3,133	1,636
January 1, 1912.....	5,347	2,399
January 1, 1913.....	7,271	3,296
January 1, 1914.....	9,492	4,608
Increase 1914 over 1909.....	8,863	3,935
Increase 1914 over 1909, per cent.....	1,409	585

The number of wooden cars in service January 1, 1912, was 48,126. There are now in service approximately 44,560, indicating the retirement from service of 3,566 wooden cars in two years. Of this number 2,366 were retired during the calendar year 1913.

Approximate Cost of Replacement of Wooden Cars

	Number	Average cost	Amount
Postal	582	$11,000	$6,402,000
Mail and baggage.....	2,672	10,000	26,720,000
Mail, baggage and passenger.....	584	10,000	5,840,000
Baggage and passenger.....	3,600	10,000	36,000,000
Baggage or express.....	7,259	8,500	61,701,500
Passenger	22,487	12,800	287,833,600
Parlor, sleeping, dining.....	6,405	22,000	140,910,000
Business	740	15,000	11,100,000
Motor	231	20,000	4,620,000
Total	44,560		$581,127,100
Annual interest charge at 5 per cent.....			$29,056,355

The charge to operating expenses under the classification of accounts of the Interstate Commerce Commission, assuming a value of $4,000 per vehicle replaced, will be $178,240,000.

Methods of Railway Taxation in Michigan

Railways in This State Over-Taxed. A Comparison With Rates in Other States and on Other Property

By David Friday

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There are at present three methods of taxing railroads in the United States that are worth discussing. They are the stock and bond method, the gross income method, and the ad valorem method. Michigan has tried all three and is at present operating under the third. From 1871 to 1901, it was operating under the second plan—that of taxing gross earnings. The great reduction of revenue from this tax consequent upon the reduction of income during the period of industrial depression following 1893 started agitation for railway tax reform. In 1897 the legislature imposed a scale of rates ranging from 2½ per cent. of gross earnings for roads with a comparatively small income, to 5 per cent. as a maximum. The greatly increasing pressure with which the necessary expenditures for government bore upon the people led them to seek for new sources of revenue, and by 1898 it had become clear that the railway tax would be increased. In 1899, a tax commission was appointed to examine into the general tax situation of the state. After considerable agitation resulting in amendment of the state constitution, the present system of taxing railroads was established in 1901. It had for its fundamental idea, a uniformity of taxation for all species of property. The following sentence from Governor Pingree's special message became the cornerstone of the new tax structure: "There is but one rule (concerning taxation) consistent with honesty; that rule is to place all property upon the same footing."

The average receipts per annum from the railroads under the gross income tax during the period 1897-1901 had been $1,210,129. The appraisal of the roads made by Professors Cooley and Adams had resulted in a valuation of $202,212,919. This gave an actual tax rate of less than .6 of 1 per cent. for the railroads. The rate for the general properties of the state had been $22.24 on assessed value in 1899; $16.33 in 1900; and $17.49 in 1901. Although the impression prevailed very generally that this general property was under-assessed and that, therefore, the rate on actual value was not as high as these figures would indicate, no one believed that such under-assessment was great enough to bring the rate that general property was paying below 1 per cent. The under-taxation of railroads seemed, therefore, established beyond possibility of dispute.

THE AD VALOREM METHOD OF ASSESSMENT

The principal changes in the Michigan system which resulted from this agitation are the following:

(1) The substitution in 1901 of the taxation of the property of railroad, union station and depot, express, telegraph and telephone, sleeping car and car loaning companies, by a system of ad valorem assessment through a state board of assessors in the place of taxes imposed as theretofore at specific rates upon gross earnings. The rate paid by these properties is called the "average rate" and is determined by the simple arithmetic process of dividing the total assessment of general property into the taxes paid by such property.

(2) The creation of the state board of tax commissioners, by an amendment to the general tax laws of 1899, and the vesting in that board of the authority to review the assessments made by local assessors throughout the state, and to correct inequalities of assessment. Under the law as at first enacted the commission was given full authority and power of review, and during the few years from 1899 to 1905 that it was permitted to exercise those powers the assessments throughout the state increased materially and much omitted property was added to the rolls. In 1905, however, the authority for review by this board was somewhat restricted, and the work of bringing the assessments of the state to cash value remained practically at a standstill. In 1911, the same general powers of review and correction as originally conferred upon the board of state tax commissioners were restored to it.

We have, then, in Michigan a system in which the railroads are to pay the same rate as all other properties if justice is to obtain. The state board of tax commissioners is charged with the duty of bringing the actual situation into conformity with this ideal. Its powers would seem to be ample to secure the realization of the intent of the law.

What has been the result of twelve years of actual experience with the law? Have we realized in practice that ideal situation in which the railroads pay the same rate as the general properties throughout the state?

The first assessment of the railroads was made in 1902, and was evidently based quite directly upon the 1901 appraisal, varying from it by only $3,500,000. The average rate for the year was $16.55, and the yield of the new tax was $3,288,162. The average receipts from railroads under the ad valorem assessment for the period 1902-1907 were $3,463,809. This was 201 per cent. of what the tax would have been for the same years under the gross income tax of 1897. Since 1909 the tax has averaged almost $4,400,000. Tested by the criterion of productiveness the new tax has certainly been most successful.

RATE OF TAXATION INCREASED

An examination of the average rate from 1902 to 1913 is interesting and instructive. Reference to the following table shows that the rate paid by the railroads increased steadily from $16.55 in 1902 to $18.01 in 1908. Since that time, it has risen with alarming rapidity, being $20.67 in 1909 and $21.56 in the current year.

Table 1—Comparative Statement—Assessed Valuation, Taxes Levied and Average Rate of Taxation, 1901-1913

Year	Total assessment	Total taxes	Average rate per $1,000
1901.....	$1,335,109,918	$23,350,404.37	$17.49
1902.....	1,418,251,858	23,476,733.55	16.55
1903.....	1,537,355,738	25,999,017.83	16.91
1904.....	1,529,969,350	25,891,584.01	16.92
1905.....	1,574,422,770	27,402,198.86	17.40
1906.....	1,598,935,606	26,330,650.07	16.47
1907.....	1,654,371,892	29,153,969.97	17.62
1908.....	1,648,671,411	29,689,332,26	18.01
1909.....	1,687,155,697	34,879,093.20	20.67
1910.....	1,739,652,478	35,710,509.65	20.53
1911.....	1,898,057,358	39,315,699.16	20.71
1912.....	2,078,694,409	43,242,968.04	20.80
1913.....	2,345,695,709	50,569,766.00	21.56

No one who is at all informed on matters of taxation in Michigan believes that the average rate represents accurately the tax burden on general property. This is tantamount to saying that the rate paid by railroads is too high if they are assessed at full value. "How much too high?" will at once be asked. A comparison of the tax burden borne by Michigan roads with the railroads of the United States as a whole will be instructive on this point. The table No. 2 presents a summary of the facts of railroad taxation in Michigan from 1902 to 1913.

It will be observed that the tax paid by the railroads during this period has been approximately 30 per cent. of net earnings from operation, and 6 per cent. of gross earnings.

MICHIGAN BASIS THREE TIMES AVERAGE FOR UNITED STATES

The table No. 3 presents a summary of the ratio of taxes to net earnings from operation for all the railroads of the

United States. This ratio is 10.3 per cent., as compared with the ratio of 30 per cent. for Michigan. The Michigan railroads are paying three times as great a proportion of net earnings from operation in taxes as are the railroads of the United States, considered as a whole.

TABLE 2

Year ending June 30	Gross earnings from operation	Operating expenses	Net earnings from operation	Net earnings less taxes	Assessed valuation	Tax levied	Per cent. tax to gross	Per cent. tax to net
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1902	$45,820,215	$35,510,219	$10,309,996	$8,826,090	$198,641,000	$3,288,162	7.17	31.90
1903	51,559,605	40,588,230	10,971,375	7,683,213	222,106,000	3,756,149	7.28	34.24
1904	51,715,342	41,615,736	10,099,606	6,343,457	196,795,000	3,330,350	6.44	32.97
1905	54,741,979	44,549,709	10,192,270	6,861,920	202,651,000	3,527,059	6.44	34.60
1906	60,458,895	47,824,590	12,634,305	9,107,246	207,068,000	3,409,915	5.64	26.99
1907	66,259,937	53,981,051	12,278,886	8,868,971	207,130,500	3,650,132	5.51	29.75
1908	63,235,347	50,007,804	13,227,543	9,577,411	207,305,000	3,713,155	5.87	28.07
1909	63,667,477	48,646,151	15,021,326	11,288,171	211,764,500	4,377,871	6.88	29.14
1910	72,025,499	53,839,115	18,186,384	13,808,513	211,716,000	4,346,841	6.03	23.90
1911	71,972,549	59,535,960	12,436,589	8,089,748	211,075,500	4,372,145	6.07	35.16
1912	76,097,686	61,192,823	14,904,863	10,532,718	210,884,500	4,387,019	5.76	29.44

TABLE 3—RAILWAYS IN THE UNITED STATES CONSIDERED AS A SYSTEM

Year	Total net revenue from operation	Taxes	Per cent. of taxes to total net revenue from operation
(1)	(2)	(3)	(4)
1901	$558,128,767	$56,944,372	10.22
1902	610,131,520	54,465,437	8.92
1903	643,308,055	57,849,569	8.99
1904	636,277,838	61,696,354	9.69
1905	691,880,254	63,474,679	9.17
1906	788,887,896	74,785,615	9.47
1907	840,589,764	80,312,375	9.55
1908	724,258,113	84,555,146	11.67
1909	819,234,128	90,529,014	11.05
1910	928,037,002	103,795,701	11.18
1911	876,103,870	108,309,512	12.36
Total	$8,116,837,207	$836,717,774	10.30

Similar conclusions follow, if we examine the per cent. of tax to net revenue from operation for the Michigan railroads as compared with the railroads of neighboring states. As shown by Table 1 above, the ratio of taxes to net earnings from operation is 30 per cent. If we compare with this the ratio of taxes to earnings for the systems which operated partly in Michigan and partly in other states and in the Dominion of Canada during the period 1909-1911, we arrive at a percentage of 28.69 for the Michigan roads and a percentage of 13.59 for the entire systems. The detailed figures are set forth in the following table:

TABLE 4—ROADS OWNED AND OPERATED

	Michigan Section			Entire Lines		
Year	Total net revenue from operation	Taxes	Per cent. of taxes to total net revenue from operation	Year	Total net revenue from operation	Taxes	Per cent. of taxes to total net revenue from operation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1909	$15,021,326	$4,377,871	29.14	1909	$91,238,505	$11,732,060	12.85
1910	18,186,384	4,346,841	23.90	1910	100,064,942	12,589,590	12.58
1911	12,436,589	4,372,145	35.15	1911	85,607,463	13,262,067	15.49
Total	$45,644,299	$13,096,857	28.69	Total	$276,910,910	$37,583,717	13.57

Year	Per cent. of total net revenue from operation in Michigan to total net revenue of entire line	Per cent. of Michigan taxes to total taxes
(1)	(2)	(3)
1909	16.47	37.31
1910	18.14	34.52
1911	14.52	32.96

Putting it somewhat differently, the per cent. of total net revenue from operation in Michigan to the total net revenue of the entire lines was 16.47, 18.14, 14.53 for the years 1909-1911, respectively. The percentage of Michigan taxes to total taxes for the same year was 37.31, 34.52, 32.96. The tax burden borne by the Michigan roads seems, then, to be approximately three times as heavy as it is for the roads of the United States as a whole, and more than twice as heavy as the tax burden borne by railroads in those states bordering upon Michigan and through which some of our larger systems operate. Another interesting comparison is that of the percentage of gross earnings paid in taxes by the Michigan roads with the percentage of gross earnings in some of the other states using the gross earnings method of taxation. The Michigan roads, under the present system, have paid about 6 per cent. of their gross earnings in taxes. States like California and Minnesota have settled upon 4 per cent. as an equitable tax upon gross earnings. Minnesota has recently raised this to 5 per cent. On this basis of comparison, the Michigan roads do not seem to be paying over 50 per cent. more than the railroads in states having a gross earnings tax. But that this is not the case will be seen when we compare the ratio of operating expenses to gross earnings in Michigan with that in Minnesota for example. An examination of gross earnings and operating expenses of the roads operating in Minnesota shows that the ratio is approximately 67 per cent. In Michigan, it is 80 per cent. A payment of 6 per cent. of gross earnings in Michigan, therefore, is a decidedly heavier burden on the roads than it would be in Minnesota; for not gross earnings, but net earnings, measure their taxpaying ability. Our railroads are, therefore, paying a higher rate upon gross earnings as well as upon net earnings than are the roads of most other states. Similar results are obtained by comparing the Michigan system with those other states having the ad valorem system of taxing railroads. In Wisconsin, the rate has remained quite constantly at a little over $11 per thousand, while the Michigan rate has risen from $16.55 to $21.56.

Thus far the evidence that has been presented proves conclusively that the railroads of Michigan are bearing a heavier tax burden than either the railroads of the United States, taken as a whole, the railroads of the neighboring states, Wisconsin and Minnesota, or the railroads of the other neighboring states in which our Michigan roads are operating. Taken by itself, this would not necessarily signify very much with respect to the justice of the tax burden imposed upon railroads in Michigan, for the assumption is that all classes of property in the state should bear approximately the same burden, making allowance for differences in the local tax rate.

RAILROAD TAXATION HIGHER THAN THAT ON OTHER PROPERTY

We must proceed, therefore, to compare the rate borne by railroads in Michigan with the rate borne by other property in the state. In the report of the State Board of Tax Commissioners to the State Board of Equalizations in 1911, the assessed valuation of the state was given as $1,739,652,458, and the average rate per $1,000 as $20.53. The valuation of the state by the state tax commission after careful examination and comparison of sales of property with assessments thereof was placed at $2,963,553,882. Had assessments been made at the valuations found by the tax commission, the average rate would have been

$12.05. The ratio of assessed value to full value was 59 per cent. The correctness of these estimates by the commission has since been substantiated by reviews of various counties which have been made by them in which the estimates placed upon the counties reviewed were found to be substantially correct. This percentage has probably not changed materially; 65 per cent. would certainly be the maximum that one could reasonably put as the ratio of assessment to actual value. Is railroad property assessed at a correspondingly low percentage of value? An examination of the net earnings less taxes for Michigan railroads for the five years 1908-12, inclusive, shows the average net earnings less taxes to have been $10,659,312. Capitalized at 5 per cent., this gives the value of $213,186,250, which is approximately the figure at which the railroads have been assessed in the last five years.

The conclusion would seem to be, therefore, that the railroads are assessed at approximately full value, while the remaining property of the state is assessed at not more than 65 per cent. of such value. The only doubt that can arise here is concerning the rate of 5 per cent. chosen for the purpose of capitalizing the net income. When one calls to mind the fact that Pennsylvania Railroad stock can be bought at a price that will yield a rate of 8 per cent. in net income and of 5 per cent. in cash dividends, this figure of 5 per cent. seems by far too low. Six per cent. or 8 per cent. would seem to be more nearly correct. Surely 5 per cent. is the lowest possible figure that could reasonably be chosen for a capitalization of these net earnings.

A similar conclusion with respect to the under assessment of general properties throughout the state is reached from an examination of separate classes of property. The electric railroads of the state, having five or more miles of interurban road, make annual reports to the state railroad commission. From this it appears that for the years 1908-13, inclusive, taxes paid were approximately 11 per cent. of net earnings from operation—about one-third of the percentage paid by the steam railroads.

A suspicion of the existence of the situation here outlined led to the provision for a special commission of inquiry into taxation by the legislature of 1911. This commission was composed of Roger I. Wykes, an attorney of Grand Rapids, who has been prominently connected with the railroad tax and rate cases during the past decade; Professor Henry C. Adams of the University of Michigan; and Patrick H. Kelly, formerly lieutenant-governor of the state, now congressman at large. The findings of this commission corroborated the conclusions here reached.

The method of procedure employed in the investigations was to examine the tax rate by industries. The conclusion reached, after careful examination, was that railroads were assessed at approximately cash value and that they were paying on that value $20.67 per $1,000—the average rate for 1911. Farms were paying about $10 per $1,000. This conclusion was reached on the basis of records of sales and assessments collected by the tax commission, in all the townships and counties in the state. City residences were paying at the rate of about $15 per $1,000. This rate was likewise computed from records of sales and assessments, which had been collected by the tax commission. Mines were paying about $7 per $1,000, as shown by an appraisal of the mining properties made for the tax commission by Mr. Finley in the same summer Interurban railroads were paying about $7 per $1,000, and manufactures were paying $5.30 per $1,000. The manufacturing corporations of Michigan reported to the Commissioner of Internal Revenue for the year 1909 $66,000,000 as their net earnings after paying interest on bonds, taxes, depreciation and all other expenses. Out of this sum of net income they paid less than $4,000,000 in taxes. The commission of inquiry capitalized their net income at 10 per cent. and added the bonded indebtedness of the manufacturing corporations at par, thus arriving at a value of approximately $750,000,000 for the manufactures. As stated above, on this value they paid a little less than $4,000,000 in taxes. The generalization thus reached seemed so startling that further investigation was made of a considerable number of industrial corporations doing business in the state—a selected number for which market quotations on their stock were available show a stock and bond value of $95,000,000. These corporations paid for the year 1910 $334,210 in taxes, thus giving a rate of approximately $3.50 per $1,000. In Michigan all corporations are required to report their balance sheets containing their tangible property only to the secretary of state. An examination of the property as reported by them and a comparison of the same with the taxes paid confirmed the commission in the correctness of its finding to the effect that $5.30 was the average rate borne by industrial corporations.

It is not necessary to present further evidence. Railroads are overtaxed in Michigan. Thirteen railroads in our state have had a deficit for at least several years last past. Several are in the hands of receivers today, and there has been practically no extension of steam railroad lines in Michigan under the present system of taxation. Furthermore, there seems little doubt to anyone conversant with the situation that Michigan is confronted with the necessity of raising intrastate rates for freight and passengers on many of its roads if the present tax rate is to continue.

THE CAUSES

What is the cause of this situation and what are the remedies that could reasonably be expected to bring relief? The constitution of Michigan, since 1850, has provided that all property shall be assessed at full value. In addition to this, the state tax commission has full power to review of its own initiative the assessments of any local assessor. This power it exercised from 1899 to 1905, and from 1911 to the present time. Notwithstanding these provisions, the tax rate has steadily risen from $16.55 to $21.56.

Our assessors are locally elected. The assessment of property is annual, and after practically each assessment the assessing officer comes before the local constituency for re-election. It is this attempt to assess all classes of property by a local officer, responsible only to a local constituency, that has without doubt been the cause of the present under-assessment of general properties in Michigan. All the prodding of the tax commission and the reviewing of the assessments by it seem not to have succeeded in raising the assessments to anything approaching cash value. When the state board of assessors was confronted with the problem of assessing the railroads, it availed itself of the services of expert engineers and statisticians to place a value upon this property. Manifestly, no one less adequately equipped was capable of performing this difficult task. Certain railroads have indulged in considerable criticism of the valuation so made, but the writer cannot escape the conviction that the valuation would have been quite adequate to meet the demands of justice if the average rate had been the true average rate and not one based upon assessed value.

There is nothing inherently vicious in the Michigan system of taxing railroads, either as regards the method in which value is determined, or as regards the theory of the average rate. The principal difficulty lies in the inadequate and ineffective administration of our local assessments by our locally elected officers. The gross under-assessment and consequent undertaxation of manufacturing corporations points to the principal weakness of the situation. The ordinary local officer lacks the capacity to value many classes of property within his jurisdiction. The appraisal of manufacturing plants and of public service property is a task calling for specially trained men and has given rise to a special profession; in Michigan, the local assessor is asked to make such a valuation, not only of tangible, but intangible property every 12 months. He is absolutely incapable of doing this work in a satisfactory manner. If he were capable of doing it, it is very doubtful, being locally elected, whether he would find it expedient to put the value upon the tax rolls. No authority short of a central body with adequate power to employ professional valuation men and with authority to demand access to accounts is capable of assessing this class of property. There is little hope of an assessment ap-

proximating full cash value until the powers of the tax commission shall have been extended to the point where it will have control of the appointment of the local assessor and of the methods and standards to be employed by him in appraising property.

PROPOSED REMEDIES

In what direction shall we look for relief from the present situation in Michigan? We might, of course, go back to the old gross earnings tax at the old rate, but any gross earnings tax will produce some of the inequalities existing under the present system of taxation of railroads. No matter what the rate upon earnings may be, the road that has only gross earnings, but no net earnings, is burdened beyond its ability to pay, for such a road is of no value to any one except the community which it serves with transportation facilities. Even if we should go back to the old gross earnings tax, we would have no assurance that the rate would not be 6 or 7 per cent. upon gross earnings, for this would be a specific tax, and a specific tax, in Michigan at least, need not bear any relation to any other tax in the system. In the event of a rate as high as 6 per cent., the railroads would have practically no relief.

A net earning tax, if it could be enacted, would probably solve the difficulty at a stroke. A 20 per cent. tax on net earnings would give substantial relief to the railroads of the state and would be so high that there would be practically no objection to the rate; especially since it is decidedly higher than the railroads of the United States pay upon the average. There is little likelihood, however, that the state legislature or the people of the state would consent to returning to a system which makes the basis of railroad taxation different from that of general taxation.

Another plan which has been proposed, and which is being supported by the Michigan Tax Association, is that of limiting the rate which municipalities may levy for purposes of local taxation to 1 per cent.

There is one other hope for relief. The tax commission, as stated above, has unlimited power to review the assessments of the local officer of its own initiative. Having made such review, the value placed upon property by the tax commission must stand for three years, during which time it may not be reduced without the permission of this board. This, I frankly believe, is the chief source from which relief must come for the railroads. The activity of the commission has resulted in an increase of $500,000,000 in the last two years, and only the unprecedented rise in taxes of more than 28 per cent. during the same interval has prevented a fall in the average rate. The commission is, at the present time, engaged in reviewing various counties. In addition to this, the tax commission has offered the services of its field men to local assessors and is attempting to aid them in improving their methods of assessment and bringing them to cash value.

The greatest relief may be expected from legislation, looking to the improvement and extension of the work of the tax commission. The tax commission should be given power, at least, to remove any local assessing officer who refuses to correct gross under-assessment when ordered to do so by the tax commission. The most desirable thing would be the abolition of the locally elected assessor and the substitution therefor of a man who is appointed by the tax commission after civil service examination. If this change in the administrative machinery for local tax administration could be effected, the valuation of the state would be at $3,500,000,000 within two years, and the average rate would be correspondingly lowered.

RAILWAY COMMUNICATION WITH THE ISLE OF WIGHT.—The Isle of Wight Chamber of Commerce has passed a resolution expressing the view that a train ferry either from Stokes Bay to Ryde or across the Solent would be a more practical scheme than the projected Solent tunnel between the Isle of Wight and the mainland.

TRAINGRAM SERVICE ON THE ST. LOUIS & SAN FRANCISCO

On April 1 the St. Louis & San Francisco established a "traingram" service under the supervision of the telegraph department to supplement, or act as an auxiliary to the telegraph service and to be restricted to communications that require more prompt handling than can be had through the regular railroad mail. A special traingram blank was provided, very similar to the ordinary telegraph blank, but printed on blue paper, and a special blue envelope to be used only for traingrams. Their use will be confined strictly to the purpose for which they are intended, and the superintendent of telegraph is authorized to issue such instructions covering the service as may be necessary from time to time. He will also exercise a strict censorship and report any infractions of the rules governing the service. A proper distinction will be made between traingrams and ordinary mail so that the former shall always be considered second only in importance to telegrams.

With proper supervision and co-operation it is believed the traingrams can be made to correspond with the commercial telegraph company's night letter or deferred service, and to effect a reduction in telegraph business with a resultant improvement in the telegraph or preferred service. The various rules for the operation of this service are described in a circular issued by General Manager E. D. Levy, as follows:

No attachments to traingrams will be handled. Communications requiring attachments or enclosures must be forwarded through the regular mail.

Messengers will pick up traingrams at the various offices and carry them to a consolidating office where they will be stamped with a time-and-date stamp, consolidated, enclosed in an envelope, and forwarded on the first available train. At consolidating stations all traingrams will be sent to the consolidating office open. At other than consolidating stations, traingrams will be enclosed in traingram envelopes and addressed by the senders. The pick-up and delivery service will be performed by regular telegraph messengers where such messengers are employed; at other points special messengers will be provided as far as necessary. Traingrams should not be allowed to accumulate in the offices, but should be placed for delivery to the consolidating office as soon as written. Train baggagemen will tie up all traingrams and messengers will meet the trains at the receiving stations so that there will be no delay in delivery. Traingrams for local stations will be handled as ordinary mail, but necessary instructions will be issued that will result in their being given preference.

To enable the telegraph department to maintain a delivery record, it will be necessary that each traingram bear a prefix letter and number separate from the file reference. Each desk authorized to send traingrams will be assigned a prefix letter, which will be preceded by the telegraph call of the forwarding station. Following the prefix letter will be the number of the traingram, beginning with No. 1 on the first of each month. For example, assuming the chief clerk in the office of superintendent transportation is assigned the letter F, his first traingram would bear the reference "S-F-1." A record of this number will be kept at the forwarding office and it will be entered on a delivery sheet at the delivering office and a receipt obtained from the addressee if required with the exception, however, that no delivery record will be maintained at local stations.

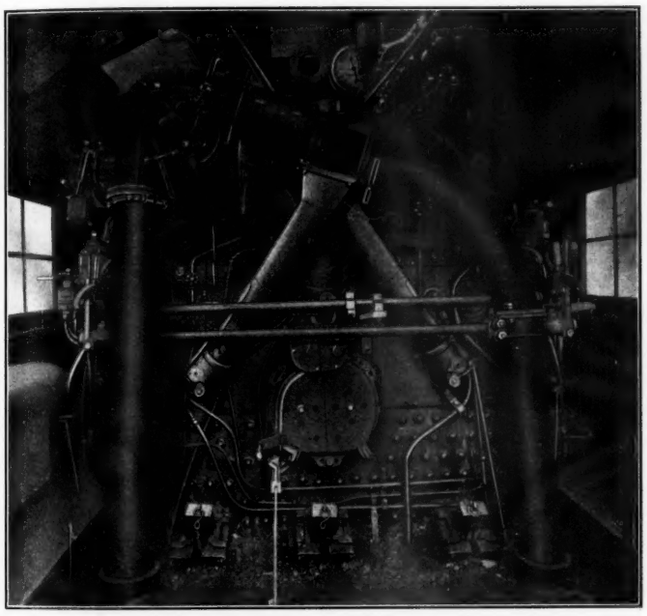
NEW ZEALAND'S LONG RAILWAY TANGENT.—New Zealand, although it is very mountainous and therefore one of the most difficult countries in the world for railway construction because of the sharp curves and heavy grades involved, has a stretch of railway that extends for 136 miles in a perfectly straight line. This is said to be the longest railway tangent in the world.

Mallet Compounds for Hump Yard Service

The Use of These Locomotives on the Lake Shore Avoids Necessity of Breaking Up Trains for Switching

The use of gravity or hump yard switching methods is constantly increasing; at present there are 95 gravity switching yards on 30 different railway systems. These yards represent a large investment, and as road locomotives increase in size it becomes relatively important to provide means at the yards for the economical handling of the heavy trains.

When a large road engine brings a train into one of these yards it generally becomes necessary to divide the train before classification. This means more operating units and more congestion. The average yard conditions will not permit a long, rigid wheel base. This is a severe limitation to the simple engine, and restricts the design as to size and power. Mallet locomotives readily meet these limitations, and also permit the designing of a locomotive powerful enough to handle the road train in one unit.



Interior of the Cab of the Lake Shore Mallet, Showing Arrangement of Throttle and Reverse Levers

After carefully studying conditions the officers of the Lake Shore & Michigan Southern placed an order with the American Locomotive Company for three Mallet (0-8-8-0 type) locomotives for hump service. Two of these engines are now in service at Elkhart, and one at Air Line Junction, and A. R. Ayers, general mechanical engineer, states that they will handle the same trains on the hump that the large consolidation engines bring into the yards. It was necessary to divide these trains when the hump yard work was done by Ten-wheel switchers.

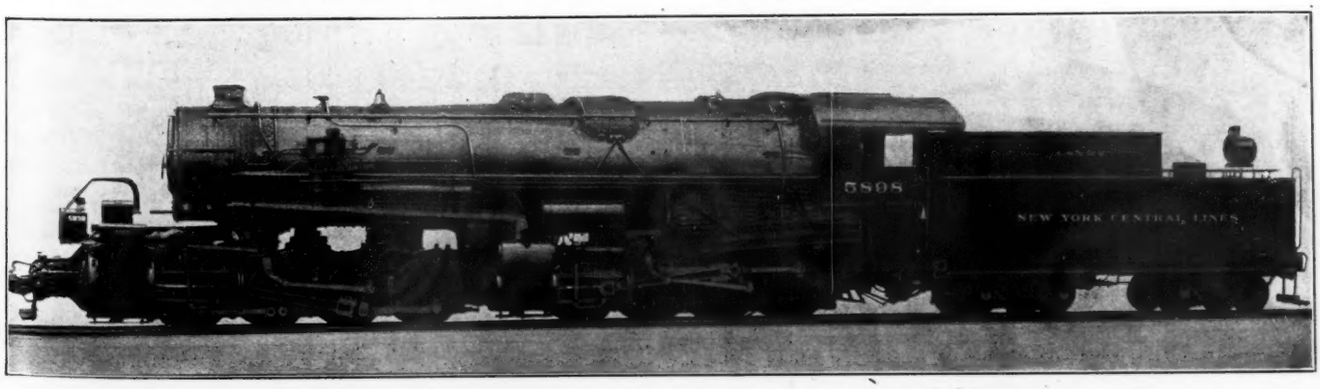
A comparison of some of the principal dimensions of the Mallets with those of the Ten-wheel switchers supplanted, shows some of the advantages of the Mallet for this particular service. The Ten-wheel switcher has a rigid wheel base of 19 ft.; the Mallet, 14 ft. 9 in. Because of the many crossovers, this short rigid wheel base should be very desirable. The Mallet, with its tender, weighs 622,500 lb.; the Ten-wheel switcher, with its tender, weighs 424,000 lb. The Mallet has a tractive effort of 100,500 lb. working compound, and 120,600 lb. working simple. With only 47 per cent. increase in weight, the Mallet has 81½ per cent. greater tractive effort working compound, and 117½ per cent. greater tractive effort working simple.

The boiler is of the conical connected type, and is 88 in. in diameter at the front end, and 100 in. in diameter at the largest course. The barrel is fitted with 255 tubes, 2¼ in. in diameter, and 45 flues, 5½ in. in diameter and 23 ft. long. The firebox is 150⅞ in. long by 94¼ in. wide, having a grate 121⅛ in. long. A Gaines combustion chamber, combined with a Security brick arch, and the railway company's arrangement of combustion flues are also included. This firebox has a heating surface of 311 sq. ft., with a grate area of only 81 sq. ft.

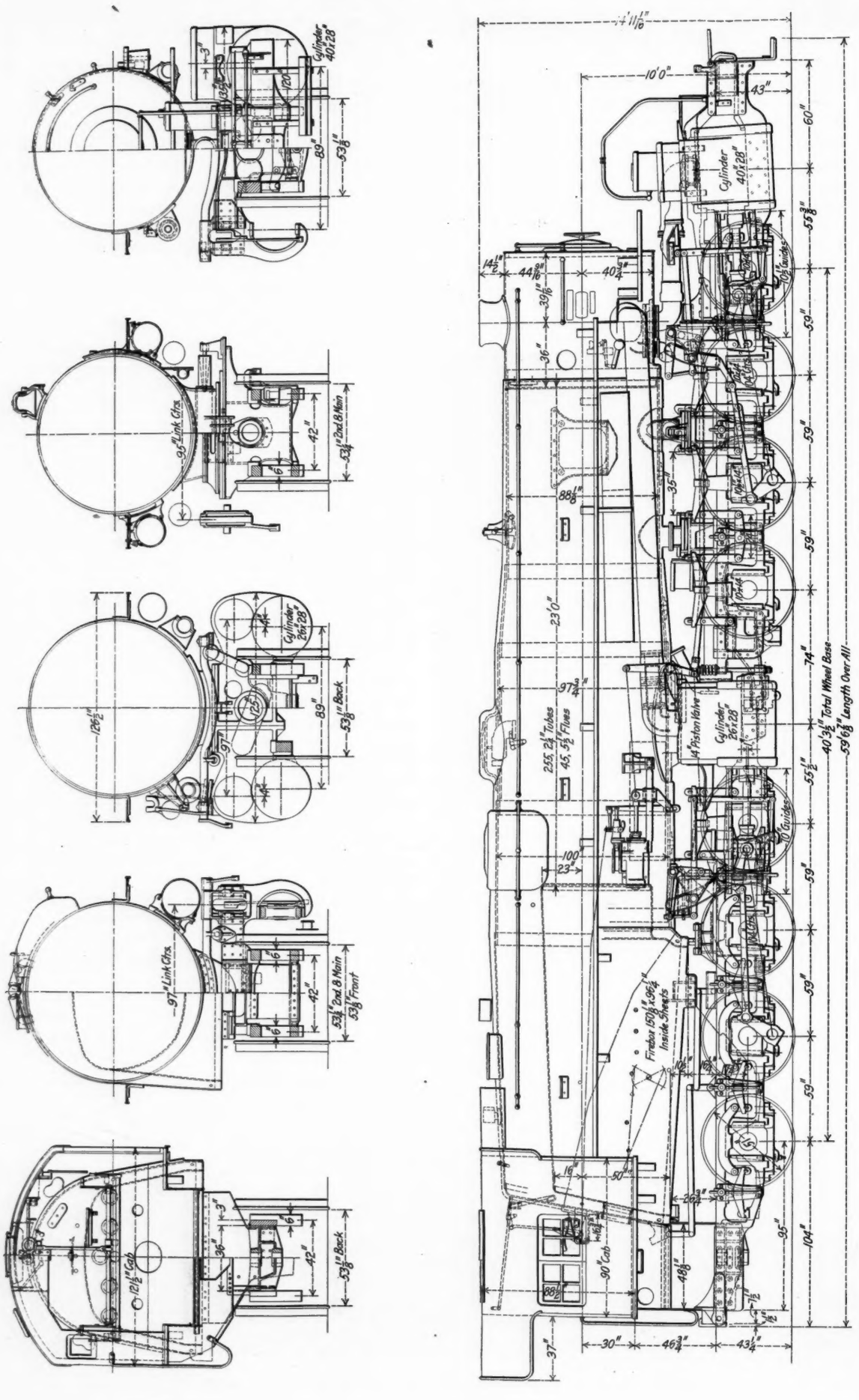
A novel feature is the arrangement for operation from either side. This was necessitated by the possibility of the engine being headed either way. A specially designed bracket, one on each side of the engine backhead, holds the operating levers for the throttle and power reverse gear. Both throttle levers are clamped to a hollow shaft, which extends across the backhead and operates the throttle by a series of cranks. The throttle lever on the right hand side has a latch which locks on a quadrant. The latch is linked with the latch release handle, which in turn is linked to the main handle and a crank. This crank is keyed to a solid shaft, which passes through the main hollow operating shaft, and is cranked and linked to the latch release handle on the left hand side. Thus either handle locks, unlocks and operates the throttle. A similar method is used in connecting the power reverse levers. Each side also has main and straight air brake valves with their gages.

The Street stoker, radial buffer, Ragonnet reverse gear, and a pyrometer, are also applied.

Additional strength with no increase in weight was secured through an extensive use of vanadium. The parts constructed of this material include engine frames, driving axles, main and side rods, rod straps, eccentric cranks, driving springs, tender



Mallet Type Locomotive Used in Hump Yard Service on the Lake Shore



Elevations and Sections of the Lake Shore Mallet

elliptic springs and crosshead keys. The cylinder castings are cast iron with vanadium content.

The following are the principal dimensions and data pertaining to these locomotives:

General Data

Gage	4 ft. 8½ in.
Service	Hump yard switching
Fuel	Bit. coal
Tractive effort	Simple, 126,960 lb.; Compound, 105,800 lb.
Weight in working order	466,000 lb.
Weight on drivers	466,000 lb.
Weight of engine and tender in working order	622,500 lb.
Wheel base, driving	14 ft. 9 in.
Wheel base, total	40 ft. 3½ in.
Wheel base, engine and tender	74 ft. 4¼ in.

Cylinders

Kind	Compound
Diameter and stroke	26 in. and 40 in. by 28 in.

Valves

Kind	H. P., Piston; L. P., Allen-Richardson slide
Greatest travel	6 in.
Outside lap	15/16 in.
Exhaust clearance	¼ in., 7/16 in.
Lead in full gear	⅛ in., 3/16 in.

Wheels

Driving, diameter over tires	51 in.
Driving journals, main, diameter and length	10½ in. by 14 in.
Driving journals, others, diameter and length	10 in. by 14 in.

Boiler

Style	Conical
Working pressure	220 lb.
Outside diameter of first ring	88⅛ in.
Firebox, length and width	150⅛ in. by 96¼ in.
Firebox, water space	Front, back and sides, 4½ in.
Tubes, number and outside diameter	255—2¼ in.
Flues	45—5½ in.
Tubes, length	23 ft.
Heating surface, tubes	4,924 sq. ft.
Heating surface, firebox	311 sq. ft.
Heating surface, total	5,289 sq. ft.
Superheater heating surface	1,235 sq. ft.
Grate area	81 sq. ft.
Smokestack, diameter	20 in.
Smokestack, height above rail	14 ft. 11 11/16 in.

Tender

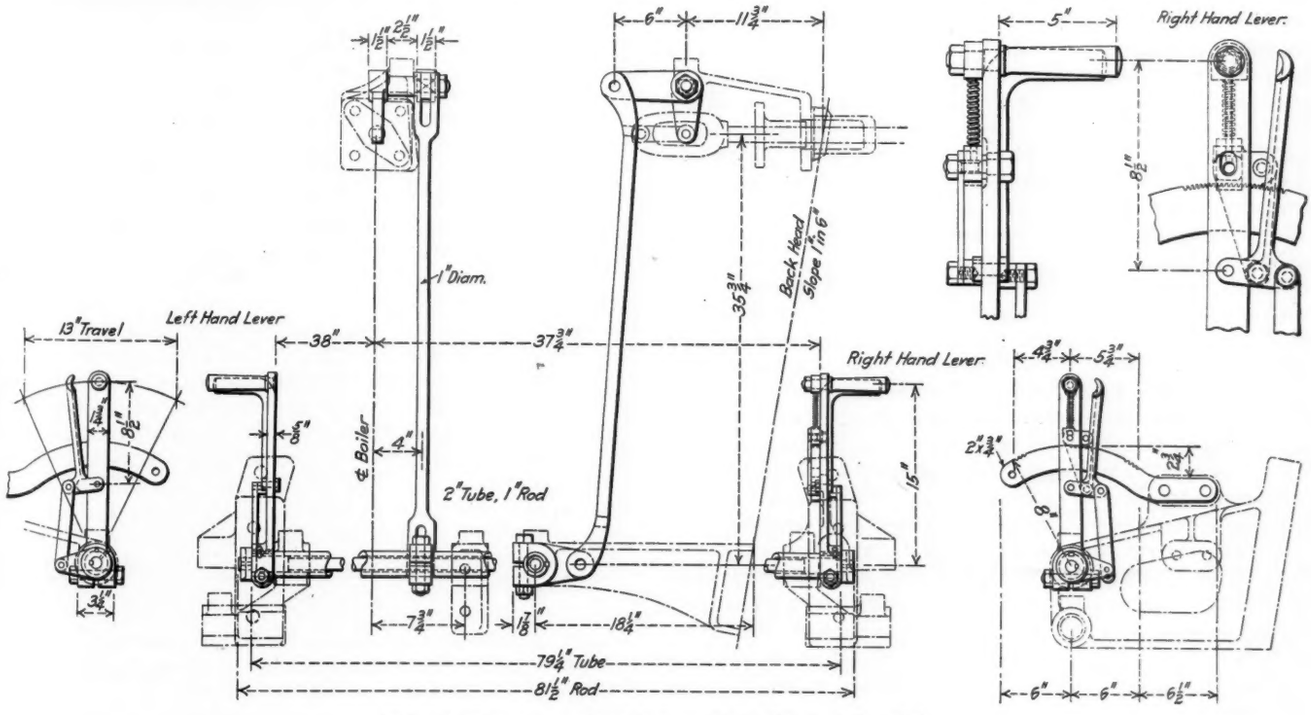
Tank	Water bottom
Wheels, diameter	33 in.
Journals, diameter and length	5½ in. by 10 in.
Water capacity	8,000 gal.
Coal capacity	14 tons

FINAL DECISION IN THE SHREVEPORT CASE

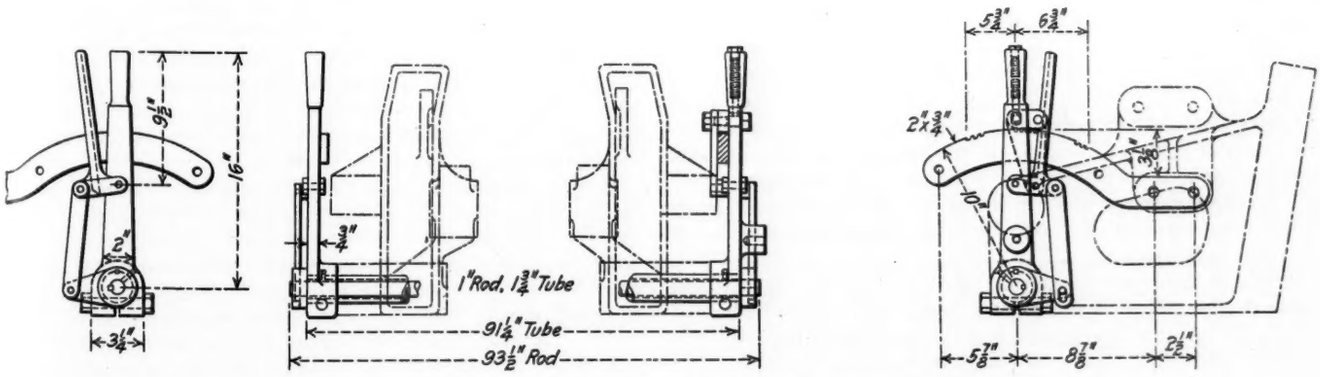
The United States Supreme Court, in a decision by Mr. Justice Hughes, has this week affirmed the decision of the Commerce Court, handed down a year ago, sustaining the order of the Interstate Commerce Commission directing the Houston East & West Texas, the Houston & Shreveport and the Texas & Pacific to maintain certain freight rates westward from Shreveport to points in Texas on a parity with rates from Dallas eastward, notwithstanding an order which had been issued by the Texas State Railroad Commission under which rates eastward (within the state of Texas) were made unreasonably low.

Justices Pitney and Lurton dissented.

The decision of the Commerce Court, by Mr. Justice Knapp, was reported in the *Railway Age Gazette*, May 2, 1913, page 994;



Throttle Levers are Provided on Both Sides of the Cab



Arrangement of the Reverse Levers for Reversing the Engine from Either Side

and the decision of the Supreme Court in the Minnesota case, also by Justice Hughes, and which also dealt with the conflict between state and federal authority, was reported in the *Railway Age Gazette* of June 13, 1913, pages 1,304 and 1,318.

The Shreveport case arose because of action by the Texas Commission avowedly designed to favor Texas jobbing centers. A typical case was that of towns in Texas, situated midway between Shreveport and Dallas, to which rates were ordered put in force from Dallas much lower than the rates on the same commodities from Shreveport. The Interstate Commerce Commission, in a decision by Commissioner Lane, held that the railroads must either reduce the rate from Shreveport or advance that from Dallas. The railroads replied that the low rate from Dallas was made involuntarily. The Commerce Court held that this claim was of doubtful force because the railroads had not protested, by means of a suit in court, against the oppressive character of the Texas Commission's order; and the order of the Interstate Commerce Commission was sustained.

The present decision confirms the finding of the lower tribunals that the carriers may advance their rates from Dallas in spite of the order of the Texas Commission.

Justice Hughes says:

"We are not unmindful of the gravity of the question that is presented when the state and federal views conflict, but it was recognized at the beginning that the nation could not prosper if interstate and foreign trade are governed by many masters, and, where the interests of the freedom of interstate commerce are involved, the judgment of Congress and of the agencies it lawfully establishes must control.

"It is unnecessary to repeat what has frequently been said by this court with respect to the complete and paramount character of the power confided to Congress to regulate commerce among the several states. It is of the essence of this power that, where it exists, it dominates. Interstate trade was not left to be destroyed or impeded by the rivalries of local governments.

". . . The authority of Congress necessarily embraces the right to control operations in all matters having such a close and substantial relation to interstate traffic that the control is essential or appropriate to the security of that traffic, to the efficiency of the interstate service and to the maintenance of conditions under which interstate commerce may be conducted upon fair terms and without molestation or hindrance.

"Wherever the interstate and intrastate transactions of carriers are so related that the government of the one involves the control of the other, it is Congress, and not the state, that is entitled to prescribe the final and dominant rule, for otherwise Congress would be denied the exercise of its constitutional authority, and the state, and not the nation, would be supreme within the national field. . . That an unjust discrimination in the rates of a common carrier, by which one person or locality is unduly favored as against another under substantially similar conditions of traffic, constitutes an evil is undeniable; and where this evil consists in the action of an interstate carrier in unreasonably discriminating against interstate traffic over its line, the authority of Congress to prevent it is clear.

"It is also clear that, in removing the injurious discriminations against interstate traffic arising from the relation of intrastate to interstate rates, Congress is not bound to reduce the latter below what it may deem to be a proper standard fair to the carrier and to the public. Otherwise it could prevent the injury to interstate commerce only by the sacrifice of its judgment as to interstate rates. Congress is entitled to maintain its own standard as to these rates and to forbid any discriminatory action by interstate carriers which will obstruct the freedom of movement of interstate traffic over their lines in accordance with the terms it establishes.

"Having this power, Congress could provide for its execution through the aid of a subordinate body, and we conclude that the order of the commission now in question cannot be held invalid upon the ground that it exceeded the authority which Congress could lawfully confer." [The commission held the rates from Shreveport reasonable, from which it followed that those from Dallas (in some cases less than half as much, for the same distance, as the westbound rates) were unreasonably low.]

As to the scope of the power Congress has granted to the Interstate Commerce Commission the government is, by Justice Hughes' decision, completely sustained. The anti-discrimination clause of the Interstate Commerce act is quoted: "This language is certainly sweeping enough to embrace all the discriminations of the sort described which it was within the power of Congress to condemn. . .

The carriers sought to have the order of the Federal Commission set aside only so far as it affected commodity rates, but the Commerce Court said that the Federal Commission had found in effect that the petitioner's interstate commodity rates from Shreveport to the Texas destinations were reasonable rates for the service rendered. The court found that the intrastate commodity rates of the Texas & Pacific from Dallas to the same destinations, which the Texas Commission prescribed, were materially less than the road was justly entitled to charge, and further, that the Texas Commission, by imposing upon petitioner lower rates than it should rightfully receive, had in point the fact placed an undue burden upon interstate commerce and thereby obstructed the freedom of its movement.

THE RAILWAY EDUCATIONAL BUREAU

On July 1, 1913, the educational bureau of the Union Pacific, the Illinois Central and the Central of Georgia, which had formerly carried on several correspondence courses for the employees of those roads, besides conducting the educational features of the shop apprentice system, was reorganized as a separate organization on a permanent and self-sustaining basis. It was decided by officers of those roads that the success of the plan justified its continuance, but that reduced earnings required the cancellation of all expense that could be done away with by the roads. It was felt that the companies interested had done their full part in establishing the bureau, and that if the employees appreciated the work they would support it on the basis of a reasonable charge. The bureau was therefore organized on July 1 as the Railway Educational Bureau, with headquarters at Omaha, Neb., under the charge of D. C. Buell as director. Mr. Buell had been chief of the educational bureau for the roads mentioned.

The apprentice schools of the roads were continued as before the reorganization, and the work of the bureau has been continued on the same basis as before, except for the small charge for instruction, and that it was extended to other roads, the original three roads continuing to co-operate with it very much as before.

A careful analysis of the cost of the educational bureau work during the four years it had been conducted by the Union Pacific demonstrated that the work could be continued without in any way sacrificing the quality of the instruction on a basis of a charge of $1 per month to subscribers. The work was extended to other lines by obtaining letters from the proper officer, indicating the willingness of the company to allow its employees to sign orders authorizing the company to deduct the amount of the subscription from their pay checks in favor of the Railway Educational Bureau, and to make the collection on these orders for the bureau free of charge.

It was not desired to burden the bureau rolls with names of men who were not studying, nor to require such men to pay for instruction they were not taking advantage of. Statistics of other correspondence schools indicate that in the great majority of cases the man who does not actively begin studying during the first year of his enrollment never does study. It was, therefore, decided that instead of selling courses or scholarships all of the bureau work would be on

the basis of a subscription for a 12 months' period, those who were studying having the privilege of renewing for such additional time as they desired at the expiration of their regular subscription, and those who were not studying automatically dropping out at the end of the 12 months, having paid $12 to determine whether correspondence instruction was or was not a good thing in their particular case.

This plan also allows the subscribers to take up any of the work offered by the bureau in which he is interested. For instance, there are many shop men who, though mainly interested in the shop practice course, might desire special information on gas engines, the locomotive boiler, the air brake, etc. A superintendent's chief clerk, while taking the greatest interest in railroad operation, might particularly wish special lessons on track work, signaling, etc. The bureau subscription gives the subscriber the privilege of requesting any information that is offered by the bureau, and receiving it.

The fundamental principles kept in mind are to make the instruction so reasonable in cost that the humblest employee who was ambitious can take advantage of the opportunity; to eliminate the man who will not study, with a minimum loss; to provide as broad a range of instructional matter as possible and to conduct the work so fairly as to avoid all complaints.

The change in the plan of handling the bureau allowing the extension of the work to other lines required a complete revision of instructional matter, so that the lessons would be general rather than based on the specific practice of a single road. This revision has been so far accomplished that the bureau at the present time is offering its revised courses on the following subjects:

Air brake, locomotive, mechanical drawing, machine design, mechanical engineering, gas engine, shop practice, tool making, pipe fitting, plumbing, railroad operation, block signaling, interlocking, station work, refrigeration, traffic, track work, concrete, surveying, mapping, mathematics, electrical engineering, sheet metal pattern drafting, boiler layout work. Other courses are still in the process of revision and will be announced later.

The first result of the change was that the great majority of studying students on the bureau rolls arranged to continue their work on the dollar a month plan. A number of other lines that had made inquiries about the bureau work and were interested in it, but had not started similar instruction, availed themselves of the opportunity of having the work extended to their employees. Also a considerable number of employees of roads other than those on which the bureau is operating have taken up courses, paying cash for them. The proportion of students who are really studying to the total enrollment has greatly increased under the pay plan.

All of the roads interested have been more than glad to cooperate with the bureau representatives in every way possible to interest such of their employees as would be benefited by taking up the courses offered in starting the work.

The bureau is not capitalized, and no railroad official is in any way financially interested in the plan. It was turned over to Mr. Buell personally to handle, with the understanding that he should make a fair living out of the work and apply any excess of earnings over necessary expenses to further increasing the efficiency of the plan. It will be possible with the support of a few more of the large systems to eliminate the man who does not study, in six months, instead of twelve months, and at a cost to him of only $6 instead of $12. This plan will be put into effect as soon as the earnings justify this change.

The bureau's instruction methods have been fully described in the *Railway Age Gazette* of June 10, 1910, and June 16, 1911. The courses are being constantly revised and kept up to date and new matter added as required.

In addition to the Union Pacific, Illinois Central and Central of Georgia Railroads, upon which the bureau was operating prior to last July, the work has been extended to the following lines:

Oregon Short Line; Oregon-Washington Railroad & Navigation Company; San Pedro, Los Angeles & Salt Lake; St. Joseph & Grand Island; Ann Arbor Railroad; Wadley Southern; Wrightsville & Tennille; Georgia; Atlanta, Birmingham & Atlantic; Western Railway of Alabama; Atlanta & West Point; Southern Pacific, Sunset-Central Lines; Morgan's Louisiana & Texas R. R. & S. S. Company; Louisiana Western; Arizona Eastern; Southern Pacific of Mexico; Georgia & Florida; Manistique & Lake Superior; Georgia, Florida & Alabama; Sumpter Valley; Spokane International; Texas South-Eastern; Chicago Great Western; Chicago, Indianapolis & Louisville.

Railroad educational work is still in its infancy. The results obtained through the aid that the educational bureau has been able to give employees of the lines on which it has been operating for the last four or five years have demonstrated that the interest in educational work of such a nature tends to produce increased efficiency and provides a nucleus of trained men from whom selections can be made to fill vacancies.

U. S. RAILWAYS AGAIN LEAD WORLD IN MILEAGE GAIN

The Bureau of Railway News and Statistics has issued the following:

"Railways of the United States again led the world in growth during 1912, although total railway mileage of the earth scored a larger gain in that year than any reported in the last five years. Total railway mileage for the world at the end of 1912 stood at 670,523 miles, according to the annual compilation of the Royal Prussian Department of Public Works, which has just been translated into English units by the bureau. This total represents an expansion of 16,717 miles, or 2.5 per cent. for the year, and compares with 15,078 in 1911, while the largest previous gain in the five years was 16,672 in 1908.

"Though the Prussian figures report new construction for the United States in 1912 as 5,798 miles, which is larger than the actual growth for that year, the total operated mileage, placed at 249,790 miles, is close to the actual operated mileage as of June 30, 1912. This reported gain in United States railways is more than double that of all railways of Europe, which added only 2,296 miles in the year. North and South America account for almost two-thirds of the entire gain in world-mileage.

Railway systems of the five great geographical divisions of the earth compare in miles of operated line as follows:

	1912	1911	Gain
Europe	212,427	210,131	2,296
North and South America	343,557	333,376	10,181
Asia	66,483	65,107	1,376
Africa	26,478	25,103	1,375
Australia	21,578	20,089	1,489
Total	670,523	653,806	16,717

How pre-eminent the United States is as the leading railway country of the world is shown by the fact that next to its mileage of almost 250,000 miles Germany comes second with only 38,894 miles. Next in line among the leading individual countries are European Russia, with 38,563 miles; British East India, with 33,403; France, 31,144; Austria Hungary, 28,410; Canada, 26,662; Great Britain, 23,360; Argentina, 20,593; Mexico, 15,805; Brazil, 13,818; Italy, 10,800; Spain, 9,517, and Sweden, 8,849.

"In relative growth over five years, however, the United States has not held its own so well, for while total world mileage in that time grew 9.9 per cent. that of the United States expanded only 7 per cent. Even this, however, exceeds Europe's record, only 5.2 per cent. in five years. North and South America in all gained 8 per cent. in the five years, but

it is the less fully provided portions of the earth which show the largest relative gains. Asia in five years has expanded her railway mileage 13.3 per cent., while Australia has grown 20.4 per cent. and Africa 39.6 per cent. The largest relative five-year gain for an individual country was 106.5 per cent., made by Equador.

"For mileage in relation to area Belgium leads the world, having 47.17 miles of railway per 100 square miles of territory. Next come Saxony, with 29.03 miles; Luxembourg, 32.52; Baden, 25.12; Alsace Lorraine, 23.35; Great Britain, 19.32; Germany and Switzerland, each 18.68; Wurtemburg, 18.43; Bavaria, 17.71, and Prussia, 17.38. Europe as a whole, however, has only 5.63 miles per 100 square miles, in comparison with which the United States has 6.92 miles per 100 square miles (including Alaska). Most other countries are far below this, Persia making the lowest showing with less than one-two hundredth of a mile per 100 square miles.

"Many individual states of the United States are better provided than most of the European countries making the best showings above, for New Jersey has 30.16 miles of railway per 100 square miles; Massachusetts, 26.31; Pennsylvania, 25.30; Ohio, 22.41, and Illinois, 21.38.

"West Australia leads the world in mileage in relation to population, having 72.48 miles per 10,000 inhabitants. Other Australian countries because of sparse settlement also make a high showing here. Canada has 41.04 miles per 10,000 inhabitants; the United States (including Alaska), 26.66; Sweden, 16.18; France, 7.94; Belgium, 7.25; Germany, 5.89, and Great Britain, 5.14; while Europe as a whole has only 4.83 miles of steam railways for each 10,000 of its inhabitants."

THE NEW NORTHERN PACIFIC-GREAT NORTHERN GENERAL OFFICE BUILDING

Contracts have recently been let for the construction of a $3,500,000 office building in St. Paul to house the general offices of the Great Northern and the Northern Pacific with provision also for the accommodation of two banks on the main floor. The new structure will be located on Jackson street, occupying the entire block between Fourth and Fifth streets, three blocks from the new Union Station site and three blocks from the Court House and City Hall. The overall dimensions of the building will be 290 ft. 5⅜ in. by 232 ft. It will be 13 stories high with a basement and sub-basement. The attic story will be framed in the same manner as the other stories in order to make possible the addition of four stories with the minimum amount of changes if such an addition becomes advisable. The building will be of steel frame construction with combination tile and reinforced concrete floor slabs. The exterior finish will be of stone for the lower two stories and brick and terra cotta for the remaining height.

Jackson Street Front of New Northern Pacific-Great Northern Office Building

The central portion of the first floor will be occupied by the First National Bank and the Northwestern Trust Company with entrances on Jackson street. The city ticket offices and produce exhibition rooms of both of the railways will occupy the ends of the building on this street level floor. The public space in the bank will be finished with mahogany, marble and genuine bronze grills.

The basement will contain the safety deposit vaults for the banks and in the sub-basement will be located the power plant facilities to supply electricity to light the entire building and to operate the elevators; also to furnish all heat and to operate the

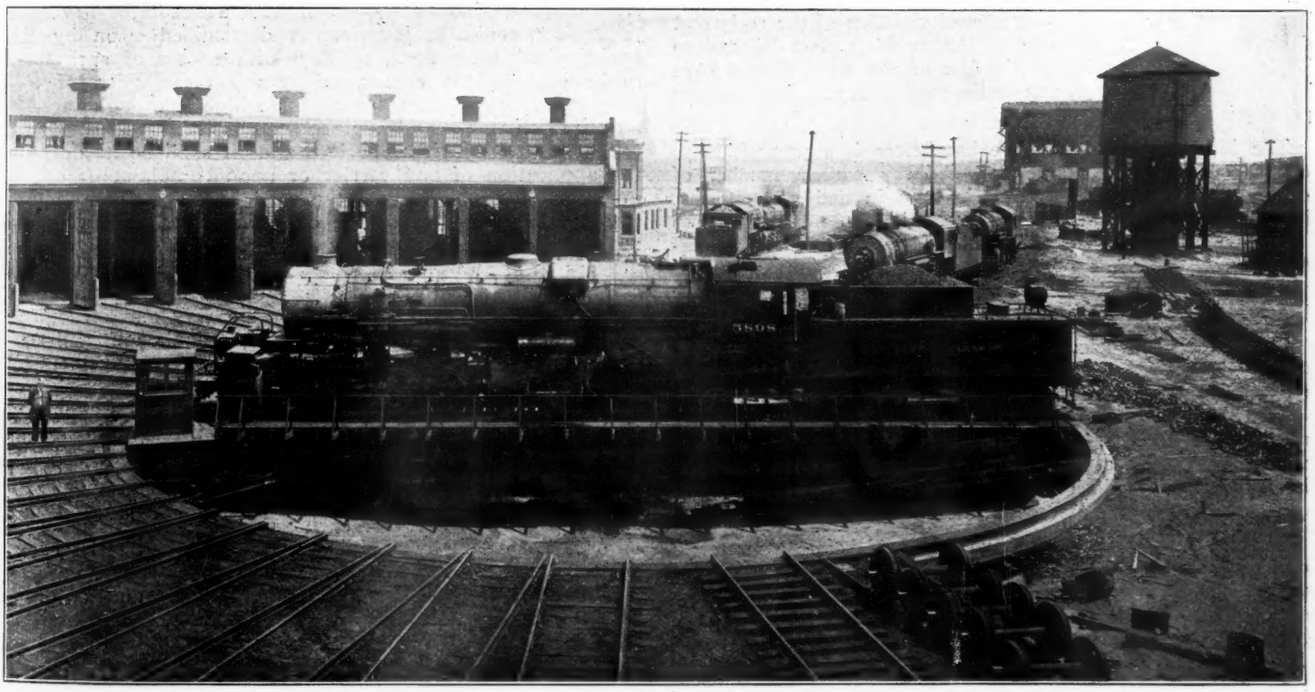
mechanical ventilating system installed throughout the building. From the preliminary soundings made on the site, no difficulty is expected in constructing the foundation for the structure, although it is possible that some caissons will have to be used under one corner.

The central portion of the second floor will contain banking offices, meeting rooms, etc. The upper portion of the building will surround a light court 145 ft. by 109 ft. in size. The office area on each floor will be completely divided in the middle; one-half to be used by the Great Northern and the other by the Northern Pacific. A typical office floor contains a total area of about 46,000 sq. ft. inside the enclosing walls. The woodwork in these office floors will be of oak and the trimming throughout will be made severely plain.

The design and construction of the building are being handled by a committee representing the three owners, consisting of R. Budd, assistant to the president of the Great Northern; W. L. Darling, chief engineer of the Northern Pacific, and E. H. Bailey, president of the First National Bank. Charles S. Frost, Chicago, is the architect and Max Toltz, St. Paul, the structural steel engineer. The contract for the structural steel has been let to the Cambria Steel Company, Johnstown, Pa., and for the general construction to Grant Smith & Co., St. Paul, Minn.

HEAVY TURNTABLE FOR THE LAKE SHORE

The accompanying illustration shows a portion of the new roundhouse for the Lake Shore & Michigan Southern at Air Line Junction, Ohio. The turntable, on which is shown a heavy Mallet switching locomotive, is 90 ft. long and is designed for 250 ton locomotives. The depth of girders of the table at the center is 6 ft. 8 in., and 3 ft. 2 in. at the ends. The table turns on a phosphor bronze disc 24 in. in diameter. It is operated by an electric tractor manufactured by Geo. P. Nichols & Brother, Chicago. The tractor is equipped with a 22 h. p. 3 phase, 25 cycle, 440-V. A. C. motor taking current through a self-contained slip ring center collector located underneath the check of the turntable. The normal speed of rotation is one complete revolution per minute. A tractor of this type will turn engines at a power cost of from ¼ to ½ cent per movement, depending on the cost of the electric current. The condition shown in the photograph is one of the worst, as with the long locomotive it is impossible to balance the turntable.



Turntable for the Lake Shore at Air Line Junction, Ohio, Designed for 250 Ton Locomotives

PSYCHOLOGY ON THE PENNSYLVANIA

Recent newspaper items have said that the Pennsylvania was making plans to examine prospective employees with more care and greater scientific accuracy than heretofore, and that Professor Muensterberg's psychic theories and methods would be employed.

Insofar as there is a basis of truth for these items, they appear to refer to certain experimental tests made by O. V. Fry, on about twenty locomotive enginemen, at Altoona some weeks ago. Mr. Fry gave some lectures in Altoona which were looked upon by the officers of the railroad with such favor that they engaged him to test the sensitiveness of a number of enginemen, including some of those having the best records as well as some of the opposite kind. The apparatus used by Mr. Fry consists of ten colored electric lights on a revolving disk, controlled by an operator. The tests were similar to those used in experimental work in psychological laboratories. The ten lights were arranged in two rings, the outer showing the seven spectrum colors and the inner the three colors used in railroad signals—red, green and white. The lights were flashed on and off while the disk was revolving and the man being tested was required to record, by means of a set of push-buttons, his quickness and accuracy of perception. The tests were devised to ascertain—

First, how quickly a man's mind acts in response to what he sees; that is, how quickly he sees, and how quickly he acts upon it.

Second, whether he acts correctly or incorrectly.

Third, whether the impressions he receives from what he sees are strong and positive or weak and easily shaken, as, for instance, by a companion in the locomotive cab miscalling a signal.

ORIENTAL RAILWAY DISPUTE.—The negotiations which have been going on for months between the Austro-Hungarian and Servian governments regarding the Oriental railways—that is, those parts of them which run through the territory recently conquered by Servia—have been broken off. It is stated that the foreign office in Vienna will send Servia a note demanding the restoration of the lines to their owners, the Oriental Railway Company, most of whose shares are held by Austrians.

General News Department

Two men, who recently held up an Illinois Central passenger train in Louisiana, have been indicted at Amite City, La., for murder. The negro porter on the train was shot by the robbers and died soon afterward.

The Texas State Tax Commissioner has announced a preliminary valuation of the intangible assets of the railroads in Texas for 1914 amounting to $164,416,160. This is a decrease of $3,480,033 from the final valuation of the previous year.

The Interstate Commerce Commission has ordered all railroads to file, before February 1, 1915, complete and detailed schedules of all property abandoned prior to June 30, 1914. A bill which has been introduced in the lower House of Congress calls for an appropriation of $1,900,000 for the Interstate Commerce Commission's work in valuation.

The Juniata shops of the Pennsylvania, at Altoona, since the beginning of this week have been running full time, 55 hours a week. Heretofore, the men worked for only 45 hours a week. The Buffalo, Rochester & Pittsburgh has laid off about 450 men at its shops in Dubois, Pa., and large numbers at other points on the line. A falling off in shipments in coal is given as the reason for this retrenchment.

By the new time tables adopted on Sunday last, the New York, New Haven & Hartford discontinues 163 passenger trains, making a saving of 3,350 train miles a day. It is said that these trains have been found to be earning less than fifty cents a mile. The Philadelphia & Reading has discontinued a number of short-trip passenger trains.

In the state district court at Austin, Tex., June 4 the attorney general of the state filed suits against the Missouri, Kansas & Texas to recover penalties for alleged violation of the reciprocal demurrage law. A shipment of lumber from New Willard to Taylor, which, according to the law of the state, should have been delivered in 16 days, was on the road 29 days. The statutory penalty is 50 cents per car per day.

The Massachusetts legislature has before it a proposition to consolidate the Boston Elevated Railway with a number of other companies operating electric lines in and near Boston, including the Bay State Railway, which has lines extending into New Hampshire and Rhode Island, and also including the Boston, Revere Beach & Lynn, a narrow gage steam line. The inclusion of the last named in this proposal appears to have been made without conferring with its owners.

The Atchison, Topeka & Santa Fe announces in San Francisco that chaperons are to be employed on transcontinental passenger trains for the accommodation of people who wish to send their daughters East alone. The trains on which the chaperons will travel are not named, but it is the intention to have one of these women make trips at stated intervals, and to announce beforehand the days on which they will travel, thus giving passengers opportunity to engage passage on these trains in advance.

Over 120 days of hearings have been held before a master in chancery and over 9,500 pages of testimony have been taken in the suit brought by the Duluth, South Shore & Atlantic to restrain the enforcement of the Michigan two-cent fare law. Hearings have been held in Chicago, Lansing, Grand Rapids, Detroit, Marquette and New York and appraisals of the property of the road have been made by Prof. Henry E. Riggs, of the University of Michigan, for the railroad and by Charles Hansel of New York, for the state. The railway finished its testimony on February 21, but the state has not yet completed its evidence.

The Stevens Bill

Congressman R. B. Stevens, of New Hampshire, has introduced in the House what may be called a blanket bill dealing with safety on railways; that is to say, he has brought together in one bill the proposals concerning block signals, automatic train stops, train rules, steel cars and headlights. The bill is No. 16875. It has not yet been acted on by the House Committee on interstate and foreign commerce, though it has been agreed to by a subcommittee, of which Mr. Stevens is chairman. It is not likely to be taken up in the House at the present session unless it should be made part of a Democratic caucus program to occupy the House while the Senate is dealing with the three main "administration" bills.

Section 1 says that every common carrier "shall furnish, provide and maintain such service, way, structures, equipment, facilities and operating methods as shall promote the safety of its employees and passengers."

The Interstate Commerce Commission is directed to require the block system to be adopted by every carrier, but not on more than one-fourth of any carrier's mileage in any one year. On this subject the bill copies two sections from the Esch bill, introduced in previous Congresses.

Authority is bestowed upon the commission, after investigation, to order the installation of automatic train-stops or train-control devices on six months' notice.

It is made unlawful for carriers after ten years to use any passenger-train cars not constructed of steel or having steel underframes, unless the commission shall extend the time; and no new passenger-train cars except steel or steel underframe are to be added after the date of passage of the bill, the commission having authority to permit during the ten years the use of passenger-train cars not made of steel or having steel underframes wherever deemed safe and reasonable by the commission.

It is made unlawful after one year for a carrier to use a locomotive engine not equipped with a headlight having a "minimum coniform illumination determined upon by the commission" after tests, no part of the cost of such tests to be paid by the carirer, or by any organization of employees or any manufacturer of headlights, though carriers may furnish tracks and engines for tests.

The commission is authorized and "it shall be its duty on the application of any carrier or upon complaint or on its own motion to investigate the road bed, structures, equipment and facilities" and "the operating rules governing the movement of trains," of any carrier, and if safety of employees or passengers is found not properly protected the commission is authorized to designate "the changes, improvements and repairs to be made in the way and structures, with kind of equipment, the standard of equipment and supplies and the operating rules governing the movement of trains."

All carriers must admit the commission and its agents to their premises and afford facilities for investigation. The commission may classify railroads and issue orders applicable to a certain class.

Penalties for failure to obey an order of the commission are from $100 to $500 for each day. The commission may enforce its orders by applying to the federal district court, which court may issue an injunction or other proper process.

This law is not to supersede state legislation until an order of the commission to that effect shall be put in operation. The requirements of the act are not to apply to electric street railways or electric interurban railways.

British Railroad Accidents in 1913

The number of persons killed in train accidents in Great Britain and Ireland in the calendar year 1913 was 41 and of injured, 871, as follows: Passengers, 33 killed, 723 injured; employees, 8 killed, 145 injured; other persons, none killed, three injured. Of passengers, the increase over 1912 in the number killed is 13, and of employees, the increase is 2. The average annual number of passengers killed in train accidents in the years 1902-1911 was 19 and of employees, 9.

Including accidents of all kinds connected with the movement

of trains and the conduct of business at the stations, the number of persons killed in 1913 was 1,131 and of injured, 9,054, increases of 120 and of 355 over the totals for 1912. Accidents not connected with the movement of cars or locomotives, are reported in a separate statement; these amount to 63 persons killed and 24,742 injured; so that the total of "railroad casualties" in the most inclusive sense was 1,194 killed and 33,796 injured.

The Press Agent's Ideal

The Baltimore & Ohio announces that live stock trains are to be deodorized!

"No longer will the sense of smell suffer shock once the new rule goes into effect, nor will obnoxious odors be detected when passenger trains meet long strings of live stock cars. The new plan provides that hogs shall be showered.

"These shower baths will be administered at terminals and at resting stations at which the live stock is fed and watered. Attention will be given to the cleanliness of cattle, horses and sheep, so that the cars in which they are hauled may be cleaned en route.

"Added to the comfort which the traveling public will enjoy, as a result of the new bathing stations, the animals will be in better condition upon arrival at destination."

Cost of Full Crew Laws

On March 10, 1914, the special committee on Relations of Railway Operation to Legislation issued bulletin No. 57, giving the summary of replies from 163 roads, having a mileage of 202,369 miles, as to the cost to the railroads of laws affecting the size of train or switching crews which have been enacted in the various states. The bulletin showed that the 98 roads affected by the legislation, reported a total of 2,359,368 trains affected at a total estimated cost per annum of $6,800,729. Further information received since indicates that the figures given for the state of Texas were in error. The exhibit has therefore been re-issued to show the total cost per annum as $5,769,174, instead of the amount mentioned previously. The revised figures for the state of Texas show an estimated cost of $3,381, insead of $1,034,936, as indicated in the previous bulletin, which was published in the *Railway Age Gazette* of April 3, 1914, page 782.

Automatic Block Signals on the Michigan Central

The main line of the Michigan Central is equipped with automatic block signals through from Chicago to the Niagara river, 517 miles, and has been so equipped for several years. An officer of the company thinks that the Interstate Commerce Commission's table, copied in the *Railway Age Gazette* of May 29, which gives only that part of the mileage which is in the United States, is misleading.

Proposed New Rates for Mail Compensation

Congressman Tuttle, of New Jersey, chairman of a special joint committee, the "Bourne Committee," presented in the House on June 4 the result of the committee's deliberations in the shape of a report recommending that the government pay the railways for carrying the mails by space instead of by estimated weight, as at present, the rate to be 21 cents a mile for 60-ft. postal and storage cars, with proportionate rates for other service. The report is unanimous. The committee says that the leading governmental authorities, including the postmaster general, favor its recommendations.

The bill makes the rates a matter of law and not of regulation, the rates being fixed so that they cannot be modified except by act of Congress. By doing away with the quadrennial weighing of the mails to determine average weight, it will save the government about $400,000 a year.

Under the present system the railroads in the course of the contract period carry at least 14 per cent. of the mails for no compensation at all. Under the plan suggested in the bill the railroads would receive contemporaneous credit with their performance of service. The postmaster general would have the sole right of initiative in the authorization of space to be used.

The bill establishes four standards for compensation. The first unit is the 60-ft. car, the second the 30-ft. car or compartment, the third the 15-ft. compartment and the fourth the closed pouch service. The rates are based on two elements, covering two distinct services. The first is the line charge, based on the car-mile, the other the terminal charge, covering loading and unloading, cleaning cars and switching, for each of which operations a sum fixed by the law will be paid in addition to the line charge. For a 60-ft. car the rate will be 21 cents a mile, and there will be a terminal or transfer charge of $8.50 the round trip; a 30-ft. car, 11 cents per car-mile and $5.50 the round trip; a 15-ft. car, 6 cents per car-mile and $4.20 the round trip; closed pouch space, 3 cents per car-mile and $1.20 per round trip.

These rates are admittedly a little less than the computations of the Interstate Commerce Commission show the railroads are receiving for commercial business. Under the present system R. P. O. and storage cars return a revenue to the railroad of 22.4 cents a mile, as against a passenger revenue of 24.98 cents. On the other hand, the new system will relieve the railroads completely of the bothersome transfer service and delivery. The law now provides that where a post office is within 80 rods of a railroad station the railroad company shall deliver the mail at the door. Under the proposed law, the responsibility of the railroad will end when the mail is unloaded from the car.

There appears to be some strife among Congressmen as to what shall be done about mail pay. The Bourne Committee consists of former Senator Jonathan Bourne, Jr., of Oregon, chairman; former Senator Harry A. Richardson, of Delaware; Senator John H. Bankhead, of Alabama; Senator John W. Weeks, of Massachusetts, and Representatives James T. Lloyd, of Missouri, and William E. Tuttle, Jr., of New Jersey. Their bill normally should go to the Post Office Committee, and be made the subject of public hearings; but on the same day that it was presented in the House, Chairman Moon, of that committee, presented what appears to be a rival bill.

THE MOON BILL

Mr. Moon's bill contains a variety of provisions not connected with transportation, but is intended apparently to cover the main points which have been dealt with by the Bourne Committee. Action was taken in the House looking to the discussion of this bill in committee of the whole before the Bourne report should be reached.

Mr. Moon's bill is H. R. 17042, and it has 17 sections. The first section provides for readjustment of pay for certain railroads affected by the floods in the Ohio valley and elsewhere, and authorizing an increase of one-half of 1 per cent. on account of the increased weight limit of packages in the parcel post ordered July 25 last. Section two regulates transportation of empty mail bags. Section three repeals the law of August 24, 1912, regulating compensation for diverted mails. Sections four to thirteen inclusive deal with matters not connected with transportation. Section fifteen fills twelve pages and prescribes rates for payment for railroad transportation. The rates for a full railway post office car are to be 20 cents a mile, and in addition $2 initial rate and $2 terminal rate for each one-way trip. This and the other rates are somewhat less than those named by the Bourne Committee. For closed-pouch service the bill provides for compensation by weight, as is done now for all mail transportation. For this purpose closed-pouch mails are to be weighed, not less than once a year, for 35 days. Provision is made for the rapid introduction of steel cars. Mails carried in freight trains are to be paid for at rates not exceeding the usual and just freight rates.

The postmaster general from time to time shall inform himself as to the revenue received by railroad companies from express companies and may fix rates, not exceeding those of the express companies, to be paid railroads for transportation of mail other than first class mail. The postmaster general may petition the Interstate Commerce Commission for an order determining car load and less than car load rates for carrying mail matter of the fourth class, and periodicals; and may order the railroads to carry the mail thus when practicable. He may send third class and fourth class matter and periodicals less frequently than first class mail, if thereby he can economize in transportation without material detriment to the service.

It is made unlawful for any railroad to refuse to perform mail service at the rates provided by law; penalty $5,000.

The Chinese Railway Loan

The scheme of the Ministry of Ways and Means relating to the second loan for the railway from Peking to Hankow worked out jointly with groups of English, American and European financiers, is once again reported as definitely concluded. The loan will amount to $20,000,000, and will be repayable in 20 years.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Next convention, October, Washington.

AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, 143 Liberty St., New York.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, I. C. R. R., East St. Louis, Ill.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Next convention, August 20 and 21, New York.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 29 W. 39th St., New York. Annual convention, October 12-16, Atlantic City, N. J.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOC.—H. G. McConnaughy, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.

AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 20-22, 1914, Los Angeles, Cal.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March 16-18, 1915.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Karpen Building, Chicago. June 15-17, Atlantic City, N. J.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga. Next convention, July 20-22, Hotel Sherman, Chicago.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa. Next annual meeting, June 30 to July 4, Hotel Traymore, Atlantic City, N. J.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. W. Hunt, 220 West 57th St., New York; 1st and 3d Wed., except June, July and August, New York. Annual convention, June 3-5, Baltimore, Md.

AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wemlinger, 11 Broadway, New York; 2d Thursday of each month, at 2 P. M., 11 Broadway, New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. June 16-19, St. Paul-Minneapolis, Minn.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Next convention, January 19-21, 1915, Chicago.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—E. R. Woodson, 1300 Pennsylvania Ave., Washington, D. C. Annual meeting, June 24, Minneapolis, Minn.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—C. W. Egan, B. & O., Baltimore, Md.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago. Semi-annual meeting, June 12, Hotel Denis, Atlantic City, N. J. Annual convention, October 19-23, Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York. Annual meeting, Hotel Chalfont, Atlantic City, N. J., June 18-19.

ASSOCIATION OF WATER LINE ACCOUNTING OFFICERS.—W. R. Evans, Chamber of Commerce, Buffalo, N. Y.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—L. D. Mitchell, Detroit Graphite Co., Chicago, Ill. Meeting with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que.; 1st Thursday, October, November, December, February, March and April, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawler Ave., Chicago; 2d Monday in month, except July and August, Lytton Bldg., Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Fri. in Jan., May, Sept. and Nov. and 2d Thurs. in March, Hotel Statler, Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—Edw. J. Dugan, P. O. Box 654, St. Paul, Minn.; 2d Monday, except June, July, August and September, Old State Capitol Bldg., St. Paul.

ENGINEERS' SOCIETY OF PENNSYLVANIA.—Edw. R. Dasher, Box 75, Harrisburg, Pa.; 1st Friday after 10th of each month, except July and August, 31 So. Front St., Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, Oliver Bldg., Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 605 Grand Central Station, Chicago; Wed. preceding 3d Thurs., Transportation Bldg., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick Bldg., Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 829 West Broadway, Winona, Minn. Next convention, July 14-17, Hotel Sherman, Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Next convention, third Tuesday in August.

MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—T. I. Goodwin, C. R. I. & P., Eldon, Mo. Next convention, November 17-19, 1914, Detroit, Mich.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Karpen Building, Chicago. June 10-12, Atlantic City, N. J.

MASTER CAR & LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next convention, September 8-11, Nashville, Tenn.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Next convention, March 15 to 19, 1915, Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings monthly.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria, Ill.; 2d Thursday in month, Jefferson Hotel, Peoria.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILROAD MASTER TINNERS, COPPERSMITHS & PIPEFITTERS' ASSOCIATION.—U. G. Thompson, C. & E. I., Danville, Ill.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City Southern, Kansas City, Mo.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Mobile & Ohio, Mobile, Ala. Annual meeting, 1st Tuesday in October.

RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa. Annual meeting, Bluff Point, N. Y., September 22-24.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa. Meetings with M. C. B. and M. M. Associations. Atlantic City, June 10 to 17.

RAILWAY TELEGRAPH & TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 50 Church St., New York. Meetings with Assoc. of Ry. Teleg. Supts.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va.; 2d Monday in month, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Next convention, September 8-10, 1914, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SALT LAKE CITY TRANSPORTATION CLUB.—R. E. Rowland, Hotel Utah Bldg., Salt Lake City, Utah; 1st Saturday of each month, Salt Lake City.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meeting with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—Carl Nyquist, La Salle St. Station, Chicago.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Atlanta, Ga. Next meeting, July 16, Chattanooga, Tenn.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., 10 A. M., Candler Bldg., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. S. Marks, Agent, Interstate Despatch, Toledo, Ohio; 1st Saturday in month, Boody House, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillsburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York; last Tuesday in month, except June, July and August, Waldorf-Astoria, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie R. R., Pittsburgh, Pa.; meetings bimonthly, Pittsburgh. Annual meeting, 2d Monday in June.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library Building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Next convention, June 16, Jacksonville, Fla.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Supt.'s office, L. S. & M. S., Detroit, Mich.; meetings monthly, Normandie Hotel, Detroit.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Next meeting, September 15-18, Hotel Sherman, Chicago.

UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, Newhouse Bldg., Salt Lake City, Utah; 3d Friday of each month, except July and August, Consolidated Music Hall, Salt Lake City.

WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Building, Chicago; 3d Tuesday of each month, except June, July and August, Karpen Building, Chicago.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; regular meeting 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF APRIL, 1914

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance										
		Freight.	Passenger.	Total. inc. misc.	Way and structures.	Of equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	143	$95,516	$34,200	$139,541	$20,338	$31,900	$4,048	$55,890	$6,022	$118,198	$21,343	—$264	$7,250	$13,829	—$15,262
Alabama Great Southern	309	296,808	93,780	424,064	61,252	123,189	14,234	153,344	13,853	365,872	58,192	—709	15,493	41,990	—13,397
Ann Arbor	292	109,509	36,548	159,049	19,739	16,827	5,188	63,456	7,772	112,982	46,067	57	13,771	32,353	4,004
Arizona & New Mexico	109	58,136	8,288	69,073	7,345	9,887	690	13,071	2,627	33,620	33,453	.....	3,000	32,453	—1,127
Arizona Eastern	367	190,730	36,807	237,018	29,408	24,369	2,102	64,487	10,946	131,312	105,706	349	12,260	93,795	11,771
Atchison, Topeka & Santa Fe	8,340	5,296,515	1,837,656	7,997,333	913,529	1,310,506	170,944	2,240,083	170,115	4,805,177	3,192,156	.....	400,513	2,791,643	116,386
Atlanta & West Point	93	49,054	36,883	96,745	15,107	22,969	5,201	33,729	4,025	81,031	15,714	—125	7,125	8,464	—4,680
Atlanta, Birmingham & Atlantic	646	165,952	45,525	230,619	41,363	40,665	14,116	106,021	13,495	215,660	14,959	.....	14,337	622	—29,556
Atlantic & St. Lawrence	167	100,781	42,409	156,395	25,817	21,481	4,116	71,455	4,382	127,251	29,144	.....	10,157	18,987	—2,165
Atlantic City	167	67,906	77,160	152,958	34,560	14,853	1,763	78,620	1,286	131,082	21,876	—1,593	15,000	5,283	5,438
Atlantic Coast Line	4,681	2,255,486	774,637	3,267,613	442,697	551,476	51,609	1,175,525	104,012	2,325,319	942,294	18	132,000	810,312	—175,997
Baltimore & Ohio—System	4,456	6,096,078	1,219,901	7,763,103	723,686	1,251,460	165,175	3,026,980	191,084	5,358,385	2,404,718	—78,185	287,441	2,039,092	909,986
Baltimore & Ohio Chicago Terminal	77	.....	541	106,765	11,434	21,162	691	53,258	5,436	91,981	14,784	1,061	19,021	—3,176	—22,252
Bangor & Aroostook	631	342,480	50,824	407,116	52,722	42,248	2,488	110,630	9,559	217,647	189,469	180	8,789	180,860	76,702
Belt Ry. Co. of Chicago	21	.....	.....	262,202	31,407	26,168	615	94,293	6,844	159,327	102,875	.....	11,610	91,265	—6,634
Bessemer & Lake Erie	204	402,543	28,242	440,757	79,649	209,181	8,635	138,756	10,887	447,108	—6,351	.....	18,000	—24,351	—155,159
Bingham & Garfield	27	144,128	4,822	149,783	9,529	17,231	628	24,873	2,783	55,044	94,739	.....	2,852	91,887	35,340
Birmingham Southern	44	49,290	1,078	88,246	13,719	14,588	497	32,614	4,321	65,739	22,507	.....	1,614	20,893	—24,078
Boston & Maine	2,252	2,371,409	1,210,149	3,873,600	430,401	700,254	38,417	1,793,427	112,286	3,074,785	798,815	13,270	171,970	640,115	82,624
Buffalo & Susquehanna R. R. Corporation	253	41,541	7,727	53,380	21,363	31,318	1,269	26,902	6,230	87,082	—33,702	.....	2,600	—36,302	.....
Buffalo & Susquehanna Railway	91	13,312	5,876	21,926	4,089	8,371	571	12,971	2,627	28,629	—6,703	—4	1,600	—8,307	7,964
Buffalo, Rochester & Pittsburgh	586	443,517	93,970	562,476	119,414	193,704	13,033	253,394	19,422	598,967	—36,491	—322	24,000	—60,813	—237,990
Butte, Anaconda & Pacific	91	95,478	11,397	115,733	12,505	26,002	632	38,068	4,655	81,862	33,871	.....	2,500	31,371	6,805
Canadian Pacific Lines in Maine	233	92,145	43,598	144,313	Cr.—10,862	23,154	7,408	62,604	4,773	87,077	57,236	.....	11,000	46,236	—8,863
Carolina, Clinchfield & Ohio	248	172,674	14,225	191,377	14,230	25,050	7,341	37,160	9,403	93,184	98,193	.....	14,250	83,943	—31,765
Carolina, Clinchfield & Ohio of S. C.	18	11,885	1,515	13,725	1,385	91	1,855	2,637	546	6,514	7,211	.....	750	6,461	—1,460
Central of Georgia	1,924	680,816	268,761	1,047,699	179,009	216,542	32,322	403,876	44,785	876,534	171,165	5,815	52,360	124,620	—40,732
Central of New Jersey	676	1,745,223	415,323	2,236,521	282,321	406,429	25,750	709,544	44,158	1,468,202	768,319	—41,821	111,837	614,661	—113,712
Central New England	304	316,367	36,309	365,038	30,435	41,875	1,166	124,215	4,440	202,131	162,907	—134	11,500	151,273	7,379
Central Vermont	411	239,951	65,781	327,542	33,236	69,969	8,943	170,873	9,529	292,550	34,992	83	16,980	18,095	—40,684
Charleston & Western Carolina	341	148,931	28,298	185,733	30,931	27,633	3,543	70,075	5,839	138,021	47,712	.....	5,000	42,712	11,963
Chesapeake & Ohio Lines	2,347	2,526,999	475,071	3,128,607	367,576	670,687	52,235	1,038,489	82,697	2,211,684	916,923	8,522	120,671	804,774	591,184
Chicago & Alton	1,026	619,217	299,292	1,007,515	159,077	252,518	45,709	413,853	34,243	905,400	102,115	—4,138	55,200	42,777	49,110
Chicago & Eastern Illinois	1,282	615,294	219,525	923,078	117,034	272,112	24,724	416,897	35,077	865,844	57,234	—1,329	56,900	—995	—219,726
Chicago & Erie	270	377,701	55,536	471,447	60,277	107,698	19,907	254,018	12,084	453,984	17,463	—2,021	9,004	6,438	75,830
Chicago & North Western	8,095	4,066,178	1,507,740	6,203,492	851,207	1,034,114	108,444	2,552,863	141,352	4,687,980	1,515,512	3,057	385,000	1,133,569	48,121
Chicago, Burlington & Quincy	9,129	4,493,766	1,524,906	6,594,676	1,610,444	1,283,638	133,686	2,289,498	226,299	5,543,565	1,051,111	—12,595	304,326	734,190	—308,913
Chicago Great Western	1,496	788,287	228,736	1,109,157	156,693	208,661	48,168	453,694	32,842	900,058	209,099	—790	46,106	162,203	17,163
Chicago, Indiana & Southern	359	273,934	21,642	306,492	46,431	92,746	7,914	137,651	10,529	295,271	11,221	526	18,600	—6,853	—24,256
Chicago, Indianapolis & Louisville	617	351,589	138,590	539,358	84,229	97,636	20,511	215,495	19,298	437,169	102,189	.....	32,558	69,631	—67,389
Chicago Junction	12	.....	.....	161,024	13,308	20,856	950	88,334	4,209	127,657	33,367	10,450	1,799	42,018	—18,255
Chicago, Milwaukee & St. Paul	9,690	5,085,578	1,454,736	7,106,116	788,736	1,059,637	133,283	2,858,059	145,149	4,984,864	2,121,252	17,263	354,240	1,784,275	313,280
Chicago, Peoria & St. Louis	255	98,749	20,967	127,919	25,370	30,763	3,553	66,439	5,671	135,796	—7,877	.....	8,300	—16,177	—5,819
Chicago, Rock Island & Gulf	477	139,773	43,427	200,981	30,325	23,271	9,532	84,524	8,336	155,988	44,993	—591	8,814	35,588	—9,556
Chicago, Rock Island & Pacific	7,845	3,118,871	1,280,188	4,737,578	681,043	759,037	140,679	2,157,374	150,816	3,888,949	848,629	—11,313	226,207	611,109	—194,246
Chicago, St. Paul, Minn. & Omaha	1,753	883,787	370,461	1,346,327	161,914	210,740	27,160	541,109	37,968	978,891	367,436	—2,742	84,345	280,349	51,777
Chicago, Terre Haute & Southeastern	374	76,188	16,575	96,577	25,905	41,316	3,497	43,103	9,816	123,637	—27,060	—421	11,500	—38,981	—41,986
Cincinnati, Hamilton & Dayton	1,015	609,010	103,173	796,175	169,590	145,566	21,520	397,918	20,126	754,720	41,455	.....	48,005	—6,550	66,622
Cincinnati, New Orleans & Tex. Pac.	337	709,708	141,052	892,170	87,534	220,743	25,932	294,209	22,016	650,434	241,736	—240	31,000	210,496	78,050
Cincinnati Northern	246	85,429	14,399	104,835	13,216	30,129	2,839	49,637	3,823	99,644	5,191	.....	6,000	—809	—46,643
Cleveland, Cincinnati, Chic. & St. Louis	2,361	1,711,548	649,165	2,622,118	443,041	692,712	72,881	1,242,563	68,609	2,519,806	102,312	—1,185	124,500	—24,073	—563,433
Colorado Midland	338	93,070	18,643	120,963	24,880	28,393	7,191	55,131	6,155	121,750	—787	—949	10,000	—11,736	25,752
Colorado & Southern	1,127	410,325	94,937	545,598	87,809	93,777	10,866	192,145	22,062	406,659	138,939	—1,857	35,625	101,457	—44,019
Cumberland Valley	162	233,645	49,938	293,955	27,871	35,001	4,251	96,795	7,616	171,534	122,421	—274	5,910	116,237	11,477
Delaware & Hudson Co.—R. R. Dept.	881	1,744,658	217,631	2,028,350	131,644	308,356	28,164	745,462	67,182	1,280,808	747,542	2,178	58,654	691,066	122,778
Delaware, Lackawanna & Western	960	2,457,741	655,495	3,330,031	501,706	492,120	74,973	1,021,706	74,538	2,165,043	1,164,988	19,769	185,000	999,757	2,763
Denver & Rio Grande	2,585	1,231,818	338,355	1,650,851	265,252	321,044	38,116	538,427	52,242	1,215,081	435,770	—3,727	70,000	362,043	8,647
Denver & Salt Lake	255	66,900	15,605	84,965	24,404	20,200	881	34,757	4,528	84,770	195	.....	4,500	—4,305	2,625
Detroit & Mackinac	411	78,509	26,019	110,072	11,995	15,291	3,039	38,252	2,532	71,109	38,963	—475	9,153	29,335	—5,439
Detroit & Toledo Shore Line	79	103,002	.....	103,495	13,284	9,921	1,567	30,111	2,630	57,513	45,982	.....	4,724	41,258	4,611
Detroit, Grand Haven & Milwaukee	191	132,000	44,000	201,996	32,649	41,624	6,442	125,519	7,069	213,303	—11,307	161	3,600	—14,746	—16,481

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF APRIL, 1914—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance										
		Freight.	Passenger.	Total. inc. misc.	Way and structures.	Of equipment.	Traffic.	Transportation.	General.	Total.					
†Detroit River Tunnel	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Duluth & Iron Range	292	$99,208	$21,523	$132,006	$56,211	$53,282	$793	$64,029	$10,286	$184,601	—$52,595	—$6,077	—$6,513	—$65,185	—$87,020
Duluth, Missabe & Northern	363	62,448	33,764	102,539	141,487	83,105	1,929	72,077	13,661	312,259	—209,720	—2,003	5,251	—216,974	—247,454
Duluth, South Shore & Atlantic	627	171,969	81,099	207,458	46,974	38,807	8,590	102,120	12,423	208,914	58,544	544	19,600	39,488	—2,810
Duluth, Winnipeg & Pacific	181	119,234	20,904	142,051	16,568	38,482	4,191	50,581	5,575	115,397	26,654	.....	7,103	19,551	—54,222
El Paso & Southwestern Co.	1,030	646,154	109,359	796,008	72,474	98,387	16,793	210,483	25,281	423,418	372,590	—3,009	38,211	331,370	120,140
Elgin, Joliet & Eastern	775	790,552	5	848,157	116,922	182,826	5,860	251,726	17,204	574,538	273,619	.....	45,540	228,079	—154,831
Erie	1,988	3,086,112	756,617	4,179,672	297,244	738,464	104,952	1,454,958	113,874	2,709,492	1,470,180	—32,708	116,413	1,321,059	300,541
Florence & Cripple Creek	87	89,379	11,763	102,494	6,861	10,886	1,760	34,045	4,171	57,723	44,771	.....	9,638	35,133	—4,396
Florida East Coast	696	292,676	175,678	557,566	64,140	51,661	7,508	145,041	10,021	278,371	279,195	—10,931	20,000	248,264	101,847
Fort Worth & Denver City	454	217,131	86,760	324,451	40,540	48,049	6,727	149,858	15,638	260,812	63,639	—154	13,300	50,185	16,551
Galveston, Harrisburg & San Antonio	1,338	645,533	278,227	973,485	164,237	172,477	31,794	427,353	36,785	832,646	140,839	—2,372	45,650	92,817	—28,822
Georgia	307	170,218	66,506	258,422	26,227	47,812	12,478	129,704	9,052	225,273	33,149	.....	2,450	30,699	7,707
Georgia, Southern & Florida	395	116,649	53,873	194,844	21,424	42,951	8,417	87,344	10,797	170,933	23,911	—184	11,174	12,553	—10,456
Grand Rapids & Indiana	575	294,815	118,660	443,473	59,580	81,960	12,428	197,609	16,746	368,323	75,150	—377	24,221	50,552	30,907
Grand Trunk Western	347	423,000	159,000	617,038	75,454	118,265	22,083	296,511	20,185	532,498	84,540	—2,454	31,500	50,586	—15,896
Great Northern	7,804	3,666,326	1,104,422	5,167,715	1,531,217	815,824	119,331	1,603,105	110,097	4,179,574	988,141	8,336	400,993	595,484	—920,928
Gulf & Ship Island	308	116,051	27,977	156,606	28,784	32,473	2,807	50,125	8,799	122,988	33,618	171	7,453	26,336	—27,416
Gulf, Colorado & Santa Fe	1,596	623,462	204,766	902,030	121,241	155,454	25,956	413,293	30,993	746,937	155,093	.....	41,317	113,776	—13,029
Hocking Valley	352	291,184	67,131	394,904	34,522	78,911	7,129	149,217	14,245	284,024	110,880	.....	38,400	72,480	—105,654
Houston, East & West Texas	191	84,907	29,476	119,964	27,921	15,796	1,772	44,465	3,859	93,813	26,151	.....	4,916	21,235	12,922
Houston & Texas Central	789	303,856	111,749	447,306	119,614	80,204	11,392	245,832	17,548	474,590	—27,284	—198	27,612	—55,094	—68,366
Illinois Central	4,763	3,119,586	1,017,152	4,788,051	817,377	1,163,400	102,015	1,827,227	130,940	4,040,959	747,092	—3,520	283,500	460,062	263,348
Indiana Harbor Belt	105	.....	.....	278,530	35,354	46,337	2,819	129,926	7,829	222,265	56,265	834	6,000	51,099	—27,254
International & Great Northern	1,160	493,936	155,215	699,340	130,259	78,267	25,254	367,222	33,382	634,384	64,956	—966	35,000	28,990	19,152
Kanawha & Michigan	177	238,540	30,143	274,739	40,001	62,075	3,276	83,589	6,707	195,648	79,091	—22	12,200	66,869	9,343
Kansas City Southern	827	718,487	122,466	935,187	116,808	120,134	25,367	308,666	39,444	610,419	324,768	.....	46,638	278,130	57,988
Lake Erie & Western	906	358,777	58,622	440,631	69,462	84,729	12,154	195,956	11,465	373,766	66,865	.....	24,000	42,865	—17,303
Lake Shore & Michigan Southern	1,854	2,655,827	948,437	4,128,612	467,458	938,940	83,508	1,492,387	98,398	3,080,691	1,047,921	—1,067	196,500	850,354	—484,497
Lehigh & Hudson River	97	143,215	3,691	153,758	14,218	23,939	1,353	57,915	6,917	104,342	49,416	.....	4,000	45,416	—3,440
Lehigh & New England	291	226,122	1,148	235,916	26,181	28,649	1,724	66,330	4,196	127,080	108,836	.....	3,179	105,657	21,915
Lehigh Valley	1,442	2,885,774	370,755	3,375,089	362,594	585,452	70,079	1,157,028	93,206	2,268,359	1,106,730	—50,177	137,000	919,553	—36,376
Long Island	398	326,461	547,993	958,944	117,996	112,492	9,450	449,353	27,764	717,055	241,889	6,161	64,080	183,970	32,671
Louisiana & Arkansas	279	119,857	20,670	144,980	26,743	30,422	2,555	37,010	4,905	101,635	43,345	.....	7,091	36,254	—23,311
Louisiana Ry. & Navigation	351	118,609	20,982	150,470	29,851	17,760	5,562	65,700	6,330	125,203	25,267	.....	7,250	18,017	—24,383
Louisiana Western	208	126,031	56,813	192,694	25,368	42,293	7,071	60,081	6,673	141,486	51,208	—1,007	9,536	40,665	—14,885
Louisville & Nashville	4,923	3,353,357	982,062	4,648,749	766,316	996,609	106,517	1,652,852	115,884	3,638,178	1,010,571	4,424	225,251	789,744	—48,469
Louisville, Henderson & St. Louis	200	73,411	32,292	111,696	23,740	14,612	5,480	39,572	2,983	86,387	25,309	193	3,600	21,902	13,185
Maine Central	1,207	611,195	248,906	914,564	111,157	161,475	9,119	353,172	29,242	664,165	250,399	—5,749	52,130	192,520	5,455
Michigan Central	1,800	1,884,919	680,360	2,838,557	297,811	444,858	58,409	1,211,294	61,023	2,073,395	765,162	916	132,000	634,078	—257,880
Midland Valley	373	73,776	37,559	119,209	31,448	28,745	2,146	43,830	6,498	112,667	6,542	896	6,544	894	—18,758
Minneapolis & St. Louis	1,586	546,864	136,571	723,690	109,158	126,220	16,733	304,598	21,759	578,468	145,222	—74	35,628	109,520	—56,312
Minneapolis, St. Paul & Sault Ste. Marie	4,065	1,551,641	466,120	2,154,436	279,236	339,516	46,585	742,712	50,940	1,458,989	695,447	—921	87,402	607,124	—395,453
Missouri & North Arkansas	365	64,115	29,966	102,057	27,652	22,664	3,342	40,424	5,642	99,724	2,333	.....	5,500	—3,167	3,401
Missouri, Kansas & Texas System	3,817	1,449,231	613,994	2,231,163	267,699	289,811	64,075	883,325	101,710	1,606,620	624,543	4,040	120,219	508,364	223,419
Missouri, Oklahoma & Gulf	332	61,773	18,439	83,446	22,130	17,173	4,853	47,018	6,010	97,184	—13,738	325	6,462	—19,875	—6,445
Missouri, Oklahoma & Gulf Ry. Co. of T.	19	8,732	407	9,284	2,356	283	185	4,528	644	7,996	1,288	.....	196	1,092	1,777
Missouri Pacific	3,920	1,455,612	348,306	1,980,595	253,799	365,747	51,553	876,785	67,323	1,615,207	365,388	—2,933	100,083	262,372	—67,114
Mobile & Ohio	1,122	911,344	111,212	1,080,294	122,983	244,472	45,210	414,699	33,855	861,219	219,075	—2,335	36,717	180,023	19,049
Monongahela	67	116,010	2,820	120,683	12,590	7,060	297	24,704	2,140	46,791	73,892	.....	2,100	71,792	—3,812
Monongahela Connecting	6	.....	.....	77,639	7,578	11,515	300	40,478	2,699	62,570	15,069	.....	2,361	12,708	—3,314
Morgan's La. & Tex. R. R. & S. S. Co.	405	230,223	93,101	348,359	74,981	56,801	11,298	167,920	15,927	326,927	21,432	—743	23,112	—2,423	—12,296
Nashville, Chattanooga & St. Louis	1,231	768,884	216,701	1,062,579	155,249	194,735	42,734	412,110	31,653	836,481	226,098	—1,239	29,400	195,459	—22,592
Nevada Northern	165	120,172	11,777	135,119	20,160	20,152	450	31,141	5,764	77,667	57,452	.....	7,200	50,252	—11,364
New Orleans & North Eastern	204	243,191	47,519	314,846	36,842	73,743	10,019	115,731	12,776	249,111	65,735	381	14,200	51,916	3,049
New Orleans, Mobile & Chicago	403	133,400	27,989	171,850	31,373	24,004	4,459	58,154	8,665	126,655	45,195	21	6,178	39,038	—30,017
New Orleans Great Northern	283	106,538	29,173	149,632	17,850	21,353	2,523	37,822	7,823	87,371	62,261	—37	2,964	59,260	—6,053
New Orleans, Texas & Mexico	286	104,842	17,030	182,147	70,691	13,242	3,838	53,523	9,154	150,448	—18,301	.....	1,000	—19,301	—40,287
New York Central & Hudson River	3,756	4,995,846	2,647,730	8,689,777	1,108,334	1,804,771	166,470	3,289,382	247,572	6,616,529	2,073,248	—6,192	553,367	1,513,689	—244,119
New York, Chicago & St. Louis	566	737,541	122,865	892,969	116,903	164,108	50,322	459,584	18,685	809,602	83,367	—2,444	35,000	45,923	—92,799
New York, New Haven & Hartford	2,007	2,791,946	2,195,714	5,508,095	845,728	861,673	34,357	2,218,155	143,926	4,103,839	1,404,256	10,737	300,000	1,114,993	98,599

†Merged with Michigan Central January 1, 1914.

Traffic News

The Iowa State Highway Commission has petitioned the principal railways operating through Iowa for special freight rates to be charged counties of the state for the transportation of material needed for road making.

The Great Northern has recently taken over the cafes, newsstands and check stands over its entire system, which hitherto have been operated by an outside company. They will be operated hereafter by the dining car department.

The Chicago, Rock Island & Pacific has entered into a contract with the American Express Company whereby the latter will succeed the United States Express Company in handling the express business on the Rock Island Lines after July 1.

About 200 officers and representatives of the traffic department of the Missouri Pacific, St. Louis, Iron Mountain & Southern, Western Pacific and Denver & Rio Grande held a three-day "family meeting" last week at Salt Lake City to discuss matters pertaining to the traffic department of the roads.

On June 7 the Northern Pacific took off its overland passenger trains No. 5 and 6, the "Twin City Express," operating between Seattle and St. Paul. It is said that passenger receipts fell off in April about $100,000. In Montana new trains have been put on to take the local traffic, which would suffer from the loss of trains 5 and 6.

The Missouri Pacific and the St. Louis, Iron Mountain & Southern have filed tariffs, effective June 24, making a reduction of 40 cents a ton in the rate on coal from mines along their lines in Arkansas to Omaha, Neb., and other points. The rate to Omaha from the Jenny Lind group of mines will be reduced from $2.90 to $2.50 per ton.

It is announced that a meeting of the Official Classification Committee will be held in New York on Tuesday, June 16, for consideration of a large number of subjects enumerated in docket No. 19, including recommendations of the committee on Uniform Classification and other matters. A preliminary hearing was held in the rooms of the committee on Uniform Classification at Chicago on June 10.

The Trans-Pacific Tariff Bureau is reported to have announced advances in the steamship rates from North Pacific coast points, to become effective on September 1, to $3.50 a ton on wheat and flour to Japan, $4 to Hong Kong and $4.50 to Shanghai. Lumber rates to the Orient will also be advanced $4.50 per 1,000 ft., increasing the rate to Japan, Hong Kong and Manila from $8 to $12.50 and to Shanghai from $8.50 to $13. Still greater advances are expected in October.

The Traffic Bureau of the Salt Lake City Commercial Club has addressed a petition to the governor of the state, protesting against the action of the Union Pacific in declaring an extra dividend of cash and Baltimore & Ohio stock. The governor is asked to direct the attorney-general of the state to investigate and take the proper steps to prevent distribution of the dividend, on the ground that if the dividend be paid it will furnish an excuse for the imposition of unduly high freight rates on the people of Utah. Some time ago the Commercial Club persuaded some of the United States senators to protest against this dividend in the senate, none of whom, however, made mention of the fact that the Union Pacific had announced that its regular dividend would be reduced by two per cent. to offset the extra dividend.

Reforms in Private-Car Practices

Benjamin S. Minor and Hugh B. Rowland, attorneys for the Committee on Private Cars, have filed a brief with the Interstate Commerce Commission in connection with the investigation of private car lines. The committee, on behalf of the railroads, points out that the investigation shows:

(1) That a decrease should be made in the compensation paid on private cars carrying beef and beer and that there is no justification in increasing the mileage paid on other cars of private ownership.

(2) That the minimum on beef and other packing-house products should be increased.

(3) That the charge for refrigeration should be a flat service charge.

(4) That a commodity moving in a special car should pay a higher rate than the same commodity moving in an ordinary car, and that this increased rate should generally be taken care of by a service charge, to be made wherever a special car is ordered and furnished.

(5) That refrigeration, being a part of transportation, should be performed by the railroads except in some instances in the case of the initial icing of the car.

(6) That the railroad should be left free, as contemplated by the act, to procure equipment in such a manner as may be deemed best by it.

(7) That the commission should not require the charges made for the repair of private cars to be filed as a tariff.

(8) That certain irregularities appear to exist in the matter of bills rendered by railroad repair shops for repairs to private cars and that there should be a hearty co-operation on the part of the railroads and the private car owners to correct such abuses.

Arthur Hale is chairman of the committee, which represents 124 carriers having 199,468 miles of rails.

Car Location

The accompanying table, which was taken from bulletin No. 18 of the American Railway Association, gives a summary of freight car location by groups on May 1, 1914.

CAR LOCATION ON MAY 1, 1914

	New England.	N.Y., N.J., Del., Md., Eastern Pa.	Ohio, Ind., Mich., Western Pa.	Va., W. Va., No. & So. Carolina.	Ky., Tenn., Miss., Ala., Ga., Fla.	Iowa, Ill., Wis., Minn.	Mont., Wyo., Neb., Dakotas.	Kans., Colo., Okla., Mo., Ark.	Texas, La., New Mexico.	Oregon, Idaho, Nev., Cal., Ariz.	Canadian Lines.	Grand Total.
Total Cars Owned	88,392	688,536	284,473	211,737	170,767	495,100	20,000	155,460	34,017	139,411	153,305	2,441,198
Home Cars on Home Roads	53,268	465,954	133,617	138,686	113,109	360,866	10,770	104,491	21,229	85,599	106,818	1,594,407
Home Cars on Foreign Roads	35,124	222,582	150,856	73,051	57,658	134,234	9,230	50,969	12,788	53,812	46,487	846,791
Foreign Cars on Home Roads	41,671	229,407	183,170	71,591	52,106	116,718	10,302	45,201	21,703	45,177	28,475	845,521
Total Cars on Line	94,939	695,361	316,787	210,277	165,215	477,584	21,072	149,692	42,932	130,776	135,293	2,439,928
Excess or Deficiency	6,547	6,825	32,314	*1,460	*5,552	*17,516	1,072	*5,768	8,915	*8,635	*18,012	*1,270
Surplus	3,081	45,571	34,871	14,465	21,507	33,917	5,159	14,169	5,797	30,407	21,589	230,533
Shortage	64	3	106	55	50	1,304	...	21	...	40	11	1,654
Shop Cars—												
Home Cars in Home Shops	6,806	54,953	22,724	18,171	12,898	32,148	866	15,146	3,526	7,985	6,934	182,157
Foreign Cars in Home Shops	1,024	5,556	6,055	2,020	1,250	3,322	498	1,422	820	2,876	205	25,048
Total Cars in Shop	7,830	60,509	28,779	20,191	14,148	35,470	1,364	16,568	4,346	10,861	7,139	207,205
Per Cent. to Total Cars Owned—												
Home Cars on Home Roads	60.26	67.67	46.97	65.50	66.24	72.89	53.85	67.21	62.41	61.40	69.68	65.31
Total Cars on Line	105.16	100.99	111.26	99.31	96.75	96.46	105.36	95.15	126.21	93.81	88.25	99.95
Home Cars in Home Shops	7.70	7.98	7.99	8.58	7.55	6.53	4.33	9.74	10.37	5.73	4.52	7.46
Foreign Cars in Home Shops	.80	.81	2.13	.96	.73	.68	2.49	.87	2.41	2.06	.14	1.03
Total Cars in Shops	8.50	8.79	10.12	9.54	8.28	7.21	6.82	10.61	12.78	7.79	4.66	8.49

* Denotes deficiency.

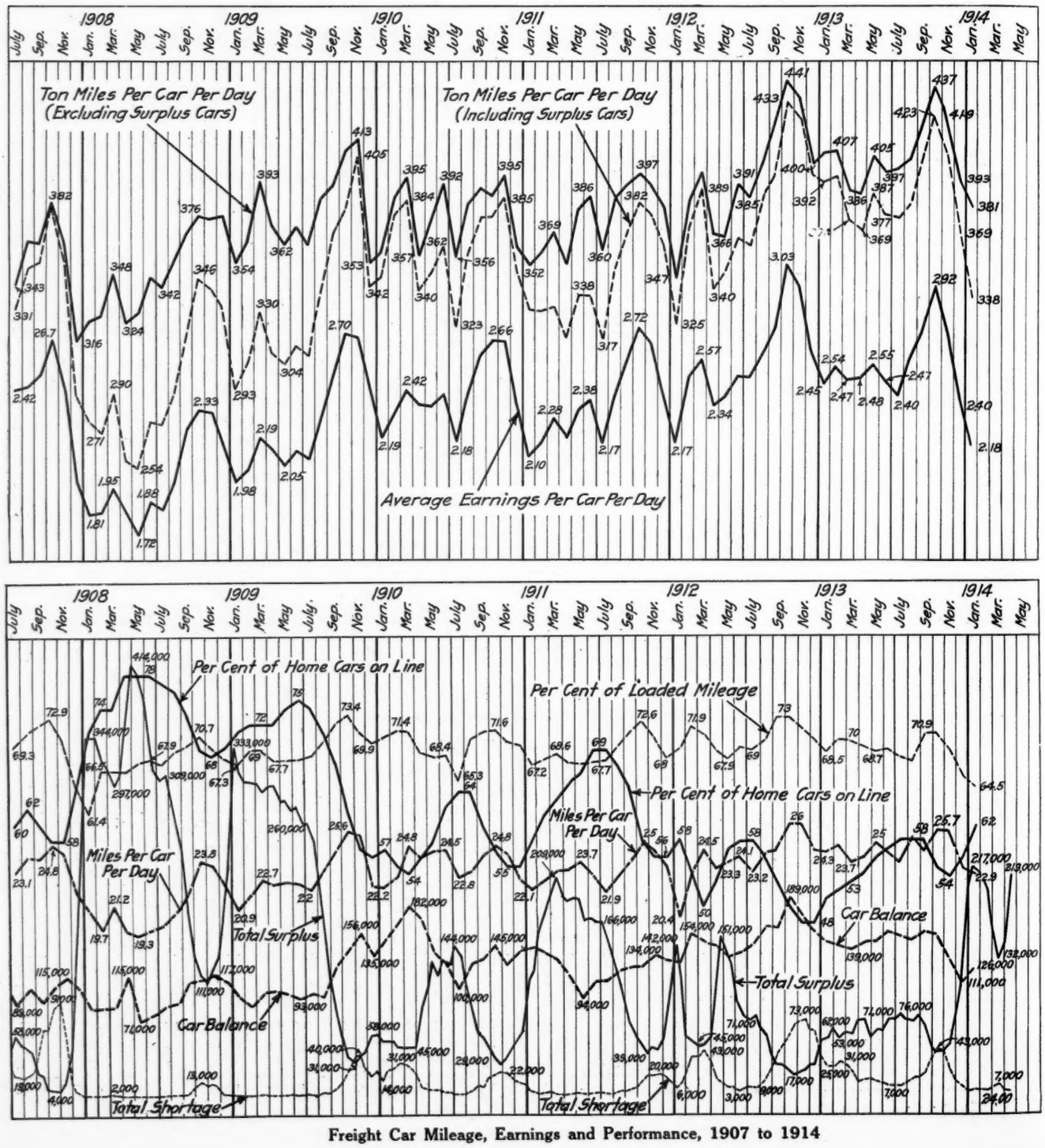
Prompt Payment of Claims on the Frisco

G. E. Whitelam, superintendent freight loss and damage claims of the St. Louis & San Francisco, has issued a circular to station agents, making a further extension of the plan of allowing station agents to make settlements immediately for small claims for loss and damage. Agents on the Frisco have had for some time authority to pay claims of certain character, and for certain amounts, under a plan which necessitated carrying the amounts through the agent's accounts, and involved considerable detail. Under the new plan agents are furnished with books of drafts and after ascertaining that the claims are properly supported with the necessary documents and that they are just and should be paid, they may issue a draft at once, and deliver it to the claimant, forwarding the stub by the first train mail to the superintendent of freight loss and damage claims in connection with the claim papers. The authority of the agent to pay claims is the same as before, but the plan will result in increasing convenience to the claimant. The office of superintendent of freight loss and damage claims will also make payment by draft of claims for amounts not exceeding $10, the draft to be mailed to the claimant direct instead of being passed to the accounting department for audit and mailing as before. This means that payment will be received from three to five days earlier than under the former plan.

Car Balance and Performance

Arthur Hale, chairman of the committee on relations between railroads, of the American Railway Association, in presenting statistical bulletin No. 168, covering car balances and performances for January, 1914, says:

The committee presents herewith statistical bulletin No. 168 covering car balance and performance for January, 1914.



Freight Car Mileage, Earnings and Performance, 1907 to 1914

CAR BALANCE AND PERFORMANCE IN JANUARY, 1914

	New England.	N. Y., N. J., Del., Md., Eastern Pa.	Ohio, Ind., Mich., Western Pa.	Va., W. Va., No. and So. Carolina.	Ky., Tenn., Miss., Ala., Ga., Fla.	Iowa, Ill., Wis., Minn.	Mont., Wyo., Neb., Dakotas.	Kan., Colo., Okla., Mo., Ark.	Texas, La., New Mex.	Ore., Idaho, Nev., Cal., Ariz.	Canadian Lines.	Grand Total.
Revenue freight cars owned	89,629	703,850	207,866	194,022	177,541	453,725	19,842	112,894	31,794	144,827	176,714	2,312,704
Average number of system cars on line	49,835	419,857	133,833	116,883	104,373	323,264	7,898	64,182	21,532	78,383	119,217	1,439,257
Railway-owned cars: Average foreign on line	40,332	253,128	95,031	70,784	65,363	118,338	12,166	49,095	29,504	39,804	38,784	812,329
Total Railway-owned cars on line	90,167	672,985	228,864	187,667	169,736	441,602	20,064	113,277	51,036	118,187	158,001	2,251,586
Excess	538	*30,865	20,998	*6,355	*7,805	*12,123	222	383	19,242	*26,640	*18,713	*61,118
Per cent. of cars on line to total owned:												
Home	56	60	64	60	59	71	40	57	68	54	67	62
Foreign	45	35	46	37	37	26	61	38	93	28	22	35
All railways	101	95	110	97	96	97	101	95	161	82	89	97
Private cars on line	3,431	31,300	8,732	7,226	9,794	15,254	1,556	6,026	4,385	11,111	2,634	101,449
Total all cars on line	93,598	704,285	237,596	194,893	179,530	456,856	21,620	119,303	55,421	129,298	160,635	2,353,035
Per cent. of cars in shop	6.78	7.24	6.54	8.16	7.58	6.16	6.37	8.90	7.14	5.93	5.31	6.96
No. of freight engines owned	1,464	10,876	3,119	3,562	2,950	7,350	498	2,206	889	2,934	2,651	38,499
Average cars on line per freight engine owned	64	65	76	55	61	62	43	54	62	44	61	61
Total freight-car mileage	52,381,079	492,786,513	139,883,206	151,097,620	144,672,729	297,798,552	23,364,377	80,721,524	42,550,782	109,459,556	86,169,522	1,620,885,460
Average miles per car per day	18.1	22.6	19.1	25.0	26.1	22.7	34.9	22.9	24.8	27.3	20.4	22.9
Per cent. loaded mileage	71.6	61.7	61.1	61.1	64.5	65.2	69.0	67.8	64.1	69.9	73.9	64.5
Ton-miles of freight, including company freight	627,304,567	7,738,766,018	1,991,626,362	2,293,475,321	1,918,971,006	3,694,321,102	372,906,190	927,826,688	491,024,295	1,530,531,054	1,334,531,096	22,921,283,699
Average ton-miles, including company freight:												
Per car-mile	12.0	15.7	14.5	15.2	13.3	14.8	16.0	14.7	11.5	14.2	15.5	14.8
Per loaded car-mile	16.7	23.5	23.6	24.8	20.7	22.7	23.1	21.7	18.0	20.3	21.0	22.9
Per car per day	216	354	278	380	347	336	556	337	286	386	316	338
Gross freight earnings	$6,473,123	$43,433,336	$11,149,174	$13,261,958	$12,963,349	$29,510,205	$2,535,339	$9,730,925	$4,642,079	$15,307,913	$8,185,182	$157,192,583
Average daily earnings: Per car owned	$2.33	$1.98	$1.73	$2.21	$2.35	$2.10	$4.12	$2.71	$4.71	$3.42	$1.73	$2.21
Per railroad car on line	2.32	2.08	1.57	2.28	2.46	2.16	4.08	2.85	2.93	4.19	1.98	2.28
All cars on line	2.23	1.99	1.51	2.20	2.33	2.08	3.78	2.72	2.70	3.84	1.94	2.18

*Denotes deficiency.

The miles per car per day were 22.9, compared with 23.5 for December. This figure for January, 1913, was 24.3.

Ton miles per car per day for January were 338, compared with 369 for December. This is a decrease of 13.78 per cent., compared with the figure for January, 1913, which was 392.

The proportion of home cars on line was 62 per cent., compared with 56 per cent. in December. This is an increase of 11 points over January, 1913.

The per cent. of loaded car mileage decreased from 65.7 per cent. in December to 64.5 per cent. in January. This figure for January, 1913, was 68.5 per cent.

The average earnings per car per day decreased 22 cents to $2.18 in January. This figure for January, 1913, was $2.45.

The accompanying table gives car balance and performance in the month covered by the report, and the diagram shows car earnings and car mileage and different car performance figures monthly from July, 1907.

British Railways May Demand Further Rate Advance

The Bureau of Railway News & Statistics has issued the following:

"English railways may be forced into applying for further advances in their rates in addition to the four per cent. increases granted last year. Advices received by the Bureau of Railway News & Statistics state that so far have the increases already awarded fallen short of compensating the companies for higher working expenses due to rising wages and costs of materials, that the carriers are confronted by the alternative of cutting off the less remunerative facilities now furnished the public or following the American example in applying for permission to raise their rates.

"Relief afforded to the companies by last year's four per cent. increase, it has been found, is only partial. Advances were applied only to such rates as could be raised within the parliamentary maxima, many being already up to the maximum. Many of those below the maxima, moreover, could not be raised for one reason or another. Hence the London & North Western estimates that the benefit it has obtained equals not more than one-half its increased expenses; the Midland and the Great Central declare the increases do 'not nearly compensate' for the concessions made and the Lancashire & Yorkshire states that increased labor costs which it must meet are 'considerably more than double' any advantage it has gained. Other companies make similar statements.

"English railways have shown a uniform reflection of American experience in that, although gross revenues were greatly enhanced in 1913, an excessive rise in expenses wiped out the advantages which should have resulted. Wages account for most of this. The London & North Western labor bill in 1913 showed an advance of about $2,500,000, of which $1,500,000 was the direct cost of extra wages paid. The Great Western estimates the concessions it has made to its staff since 1911 at $1,250,000 per annum. The North Eastern estimates the cost of its wage concessions in the next two years will be $1,500,000 a year, equal to a dividend of one per cent. on its consols. On the Midland the increase in wages and salaries in separate departments include: Enginemen, $290,000; maintenance of way, $95,000; maintenance of equipment, $115,000, and traffic, $375,000. The Lancashire & Yorkshire wages bill has been increased $650,000 per annum; that of the Great Central, $1,135,000; of the London, Brighton & South Coast, $250,000; of the London & South Western, $250,000; of the Caledonian, $650,000, and of the Glasgow & Southwestern, $165,000. . . . On top of this abnormal advance in expenses increased difficulties have been met in the form of a declining traffic similar to that which has occurred in the United States. Traffic returns of nine of the principal companies for the first 19 weeks of the current year show a decline in freight receipts of nearly $2,500,000."

TUNNEL UNDER THE DANUBE.—A tunnel under the Danube is under consideration by the Roumanian government to form a connection with its newly acquired territory. A bridge was first considered, but as no protected site was to be found, military precautions forced the abandonment of the project. The proposed tunnel will have heavily fortified terminals.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

Store-Door Delivery Not Required

Merchants & Manufacturers Association v. Baltimore & Ohio et al. Opinion by Commissioner Daniels:

For many years defendants maintained at Baltimore, Md., a store-door pick-up and delivery service which, except as to certain specified articles, embraced the first three classes of freight from defined eastern and New England territory. September 1, 1913, this service was withdrawn without change in the transportation rates, and the generally prevailing method of station delivery has since obtained. Complainant alleges that, because of the discontinuance of store-door delivery and for other reasons, the class rates between the points referred to and Baltimore are unreasonable, unjustly discriminatory, and unduly prejudicial. Reparation is asked from September 1, 1913. Upon the facts of record it is held (1) that defendants were warranted in the discontinuance of store-door delivery; and (2) that the allegations of the complainant in other respects are not sustained. Complaint dismissed.

For many years freight of the first three classes, with certain specified exceptions, from the originating points in question, was given store-door pick-up and delivery service at Baltimore, within certain prescribed limits. The immediate cause of the withdrawal of store-door delivery was the decision by the commission in the case of *Washington, D. C., Store-door Delivery*, 27 I. C. C., 347, to the effect that a similar service at Washington could not be withdrawn without causing undue discrimination so long as the same kind of service was continued at Baltimore. In order to effect the withdrawal at Washington the service was withdrawn at Baltimore also. Complainant alleged that the withdrawal amounted substantially to an increase in the rates. Following the principle of the Washington case, it is held that to the extent of the reasonable cost of store-door delivery the burden is upon respondents to justify the withdrawal of the service and the consequent increase of cost to the shipper. As to the last three classes, and as to the articles excepted from the first three classes, the burden of proof is upon complainant.

Store-door delivery at Baltimore was first inaugurated in 1867. Certain water lines reaching Baltimore established, at a date not disclosed of record, a similar service.

For a number of years the Pennsylvania and allied lines paid to the Baltimore Transfer Company for the delivery service 5 cents per 100 lb. first class, 4.5 cents second class, and 4 cents third class. The average charge for all three classes was about 4.5 cents per 100 lb. From 1907 until the withdrawal of the service additional amounts were paid per week or per month for expense of clerk hire and station or platform work in connection with the service. For the Baltimore & Ohio, delivery was performed by the Blue Line Transfer Company, at a cost to that road of about 4 cents per 100 lb. The expense for clerk hire and station or platform work is now borne by the carriers. It was testified at the hearing that the additional expense for clerk hire alone amounts to about $2,500 per month to the Pennsylvania lines. There are also additional expenses for labor in handling the freight at the stations to make it accessible to consignees, or to delivery agencies employed by them. Increased terminal facilities are likewise made necessary by the changed conditions.

Complainant's contention is in effect that the withdrawal of the service should have been accompanied by a reduction of the transportation rates to the extent of its cost to the carriers. Respondents say that the service was originally instituted and afterwards continued because of the lack of adequate freight station facilities, and was never intended to be permanent; that they are compelled at great expense to enlarge their freight stations in order to adjust themselves to the new conditions; that the service as originally accorded involved delivery on the first or second floor instead of on all floors of high buildings of more recent date; and that there was no increase in the transportation rates to cover the cost of the service.

Store-door delivery enabled the carriers to handle freight so delivered with a minimum of station or warehouse storage facilities; and undoubtedly the discontinuance of the service has made it necessary for them to enlarge their terminal facilities in this respect. We gather from the record that they are now engaged in work to this end. There has been congestion at the terminals, and it was for a time of a serious nature.

There is some contention that store-door delivery was established to meet competition by water lines, and it is claimed that the cost of the service was included in the adjustment of the rates as to the first three classes, but after considering various matters of record, the commission concludes that, even though it were conceded that store-door delivery was established in 1867 under an adjustment whereby the cost of the service was added to the transportation rates, and that the situation was the same under the adjustment of 1873, it would not follow that such was the case with respect to the present adjustment, especially in view of the fact that the earlier rates were greatly reduced as to the first, second and third classes by the adjustment which went into effect in 1887, and has continued in effect ever since.

It is incumbent upon carriers to provide adequate station and warehouse facilities for the expeditious handling and delivery of freight. While the congestion at Baltimore incident to the discontinuance of the former delivery service has been in considerable measure relieved by increased facilities at some of the stations and a better understanding by shippers of the new methods of delivery, it is apparent from the record that the present service is not as efficient as it should be. It is the plain duty of the carriers to further improve their terminals at Baltimore so as to enable them under the new methods of delivery to comply with all reasonable demands of existing traffic conditions. If this is not promptly done the matter should be brought up in another proceeding.

The store-door service at both Baltimore and Washington presented features which appeared to be grossly discriminatory. The service was accorded only within restricted limits in each city, and was never accorded to any other city by the respondent carriers, nor to freight from points other than those in the restricted territory hereinbefore referred to. Shippers very naturally felt entitled to what became customary. The carriers, if they realized the discriminatory character which was apparent when new rate schedules had replaced the original schedules, lacked the courage to incur the displeasure of patrons. The eventual result has been that when this pocket of discrimination is cut out irritation is felt, which, while unavoidable, ought not to prevent the elimination of a special privilege of many years' standing. To remedy a situation like this inevitably causes some hardship, but to refuse to remedy it would be to perpetuate unjust discrimination. (30 I. C. C., 388.)

Buffalo Coal Rates Again Upheld

Wickwire Steel Company et al. v. New York Central & Hudson River et al. Opinion by Commissioner Meyer:

This proceeding is a reopening of a case decided by the commission on May 29, 1913, *Wickwire Steel Company v. N. Y. C. & H. R.* No reason is found for departing from the original finding that the rate of $1.85 cents per ton on coke from the Connellsville region to Buffalo is a reasonable one. Although the increased rate involved had gone into effect before the case was reopened, the commission discusses the general principles applicable to suspended schedules proposing increases in rates. It was stated in the decision that in comparing the controverted rate with the rate to eastern Pennsylvania furnaces the adjustment made by the carriers in establishing the $1.85 rate tended to lessen a discrimination. Earlier in the report reference was made to testimony for the defendant that the rate was advanced from $1.65 because the latter rate to Buffalo, compared with the rate to these eastern Pennsylvania furnaces, seemed to be unreasonably low and consequently led to a protest to meet which the increase had been made so as to put the rates to Buffalo on the same basis. Complainants now contend that such evidence offered by the carriers could not justify the increase, and moreover, that such an issue, discrimination, was one which should not have been considered. The commission holds on the other hand that the necessity of its determining the propriety of a new rate would seem to mean simply that when the new rate is an increased rate, the burden of proof shall be on the carrier as to one issue only, namely, whether it is just or reasonable, and that even though the commission in the case of an increased rate is

always to consider whether it is reasonable, it is not precluded from considering the rate from other viewpoints, such as that of its preferential or discriminatory character.

This conclusion was also confirmed by the further conclusion upon which the decision mainly rests that the increased Buffalo rates seem to be just and reasonable when compared with the rates to points considered by it in the related coke cases. Complainants also contend that to justify the increased rates the commission must have gone outside of the record in the case to support its conclusion, and that in so doing it deprived complainants of the hearing guaranteed them by the act. The commission says that to contend that it could make no such comparison and that in deciding the Wickwire case or any particular case of the group it was compelled to set aside all other cases and to consider each one without any reference to the other, and this in the face of their unavoidably necessary relation, is a proposition which cannot be seriously advanced. It is true that the commission's decision does not specify with particularity the rates in the other coke rate cases used as a standard of comparison. The commission was probably betrayed into a lack of formality in this regard because of its consciousness of the familiarity of the parties with the other cases which it had in mind. It assumed that both would quite clearly understand the reference to the other cases and would have easy access to the cited comparisons. If the reference was, however, as a matter of record, too indefinite, it has now been corrected by the enumeration of the other cases in the preceding portion of this report and further causes of complaint in this regard would seem to disappear. The complaint is therefore dismissed. (30 I. C. C., 415.)

Proposed Cancellation of Coal Rates Not Justified

In re proportional rates on coal from Ohio coal fields to Mississippi river crossings. Opinion by Commissioner Clements:

The commission finds that the carriers have not justified a proposed cancellation of the proportional rate of $2.10 per net ton from the Ohio coal fields to the upper Mississippi river crossings, applicable on bituminous coal destined to points west thereof. The consequence would be to divert through Chicago such traffic as now moves through Peoria. The Minneapolis & St. Louis would lose much of the coal business it now handles and inconvenience would result to shippers wishing to use its lines. (30 I. C. C., 465.)

The Muncie & Western Railroad

Opinion by Commissioner Harlan:

The Muncie & Western connects the plant of the Ball Brothers' Glass Manufacturing Company at Muncie, Ind., with the Chesapeake & Ohio, the Pennsylvania, and the Muncie Belt, a subsidiary of the Big Four. It owns 2.78 miles of track, 1.78 miles of which consists of yard tracks and sidings in and about the glass factory. For the right of way, etc., within the plant the road pays the glass company a rental of $5,000 a year. The road has no freight car equipment and has never owned a locomotive. Since 1905 its switching has been performed and the material and labor for maintenance have been supplied by the Muncie Belt, which receives in return for these services about $7,000 a year. On the basis of 10,000 cars handled yearly the cost to the glass company is less than 75 cents per car. The Muncie & Western, however, receives allowances of $2.50 a car on inbound material and $3.50 a car on outbound manufactured products, these charges being absorbed by the trunk lines having a line haul on the traffic of the glass company. The stock of the railroad is owned only by stockholders of the parent company. The record indicates that about $28,000 in cash has been expended upon the property and that the glass company furnished the entire amount. In the year ending June 30, 1912, the Muncie & Western had a total revenue of $23,626. Its net revenue was $12,268, and its surplus $6,950, making a total surplus of $29,516. There was thus an annual net revenue of nearly 50 per cent. The commission believes that the record presents a remarkable example of the devices resorted to by industrial companies for exacting allowances from the trunk lines on their own traffic, and holds that there is no justification whatsoever for the allowance of a switching charge to the railway by the trunk lines. (30 I. C. C., 434.)

Leather Rates to Macon, Ga.

Chamber of Commerce, Freight Bureau, Macon, Ga., Cincinnati, New Orleans & Texas Pacific et al. Opinion by Commissioner Clements:

The existence of lower carload rates on shoe sole leather than on raw leather suitable for use in the manufacture of harness, bridles and horse collars to Macon, Ga., from the Ohio and Mississippi River crossings and the Gulf ports not found to result in undue prejudice and disadvantage to the shippers of the latter. (30 I. C. C., 477.)

Rates on Rice from Memphis

Memphis Freight Bureau, for Memphis Rice Mill v. Illinois Central et al. Opinion by Commissioner Clements:

From Memphis, Tenn., to the Ohio river and beyond the only rates in effect on rice are the class rates, while from milling points in Louisiana, Texas and Arkansas commodity rates are in effect, all of these rates being lower than those applicable to intermediate points. The carriers are willing to establish from Memphis to the crossings and points beyond rates on clean rice lower by 5 cents and on brewers' rice by from 1 to 3 cents per 100 lb. than the current rates from New Orleans, La., but ask authority to do so without regard to increase of discrimination against intermediate points. Upon prayer for the establishment of such differentials in favor of Memphis of 9 cents on clean and 5 cents on brewers' rice, the commission holds that the existing rates subject Memphis to disadvantage and that the relationship proposed by the carriers will result in the elimination thereof, but it does not grant authority to the carriers to increase discrimination against intermediate points, the carriers being expected either to make reductions thereto or to publish the rates proposed by them subject to rule 77 of Tariff Circular 18-A. (30 I. C. C. 471.)

Store-Door Delivery at Washington; Through Rates to the South

Chamber of Commerce of Washington, D. C., et al v. Baltimore & Ohio et al. Opinion by Commissioner Hall:

Following the decision in *Merchants & Manufacturers Association v. Baltimore & Ohio,* it is held that respondents are warranted in their withdrawal of store-door delivery at Washington, D. C., which, with certain exceptions, embraced the first four classes of freight from defined eastern and New England territories and that the class rates from the said territories to Washington are not unreasonable. Complaint is also made that the present class rates to Washington put it at a disadvantage as compared with Baltimore, Richmond and other points and that the rates from Washington to the south exceed the aggregates of the intermediate rates. A fourth section application asking authority to continue lower class rates to Richmond than to Washington from New York and other eastern points is denied. It is found that the rates to the Carolinas and the southeast are in many instances higher than the aggregates of the intermediate rates based on Alexandria. The carriers have proposed to establish rates from Washington to the southern points involved, which will be the same as the Baltimore water-and-rail rates to these points. This part of the case is, therefore, left open until it is seen how the proposed adjustment will work out. (30 I. C. C. 446.)

Brownsville Class and Commodity Rates

Opinion by Commissioner Meyer:

The carriers have proposed to increase to the usual basis for Texas differential territory the present class and certain of the commodity rates from New Orleans, Harvey and Port Chalmette to Brownsville, Tex. The present rates are exceptions to the usual rates from group A Louisiana points, which ordinarily take the New Orleans rates. They are about equal to the rates from the points of origin to Texas common points, and thus are in violation of the fourth section, both as to points of origin and of destination. The suspended rates were based on the rate from New Orleans to Texas common points, plus the regular Brownsville differential; at the hearing the carriers modified their proposals to the extent of observing Houston combinations as

maxima wherever they are lower than the suspended rates. The commission finds that the later proposed rates would be reasonable with the exception of the rate on roasted coffee, which should be no higher than 5 cents over the rate on green coffee. (30 I. C. C., 479.)

Through Routes from New York to Baltimore

Merchants & Manufacturers' Association v. Central Railroad of New Jersey et al. Opinion by Commissioner Harlan:

The commission finds that there is no necessity for the establishment of a through route and joint rates from Jersey City and New York to Baltimore, over a circuitous route through Gettysburg, Pa., because the present routes over the more direct lines are ample. On similar grounds, the class rates from Brills, N. J., and Philadelphia, Pa., to Baltimore through Gettysburg are not found unreasonable or discriminatory. (30 I. C. C., 396.)

STATE COMMISSIONS

The attorney-general of Texas has given the Texas Railroad Commission an opinion that the commission has no jurisdiction over contracts covering the construction of industrial side tracks.

The South Carolina Railroad Commission has ordered the adoption in that state July 1 of a scheme of rates for the transportation of merchandise by express similar to that prescribed by the Interstate Commerce Commission for the use of the express companies in interstate transportation. It is announced that "if sufficient protests are entered," the commission will call a hearing.

The Ohio Public Utilities Commission has rendered a decision holding that several industrial roads in the state which are involved in the decision of the Interstate Commerce Commission in the industrial railway case are common carriers and are, therefore, entitled to receive their allowances and divisions of rates from the trunk line railways. The commission ordered the restoration of the joint rates which were effective prior to April 1, when they were canceled.

The Railroad Commission of South Carolina has ordered the Pullman Company and the railroads running Pullman cars in that state to appear and show cause why they should not be required to run separate Pullman cars for white and colored people. Commissioner Hampton says that the Pullman Company disobeys the law of South Carolina, and, in addition, its officers are encouraging negroes to travel on Pullman cars. "This outrageous condition," says Mr. Hampton, "should not exist."

The Indiana Public Service Commission has issued an order requiring the Cincinnati, Bluffton & Chicago within 60 days to re-ballast its track, strengthen its bridges and culverts, and replace 60 per cent. of all defective ties; and also to put the rolling stock in safe condition. The order was issued following a petition by residents of the towns served by the road for an order requiring the road to abandon service or make the improvements. The road is 52 miles long, and is in the hands of a receiver.

The city of Moberly, Mo., has filed a petition with the Missouri Public Service Commission requesting the commission not to approve any plan of reorganization of the Wabash until provision is made for the rebuilding and maintenance of the machine and car shops of that road at Moberly, in compliance with the contract entered into on May 23, 1889. The shops were partially destroyed by fire last March and have not yet been restored. There has been a rumor that it was proposed to remove the shops to some other city, but this was denied by the road.

The Public Utilities Commission of Ohio has declined to take action on the application of the New York Central & Hudson River for approval of its plan for merging the Lake Shore & Michigan Southern, and other controlled companies, in the parent company. The question whether the proposed merger would be an unlawful monopoly of transportation between Buffalo and Chicago is one which, says the commission, it has no jurisdiction to consider. The New York Central has similar applications pending before the commissions of New York, Pennsylvania, Michigan and Illinois.

Acting on the report of one of their inspectors, C. D. McKelvey, the Public Utility Commissioners of New Jersey have held a hearing to investigate the action of the Erie road in dismissing a number of car washers, the result of which has been that passenger cars are running with windows which on the outside are very dirty. An officer of the road told the commission that the cleaning of cars cost on the average 95 cents a day, of which 52 cents is chargeable to the interior of the car. Neglecting the washing of the outside, therefore, saves 43 cents per car per day. At one of the small stations on the road, a few weeks ago, a lot of men and women gathered just before the arrival of a local train and when it stopped at the station, they rushed up with pails of water and brushes and washed the windows of two or three cars.

COURT NEWS

A jury in the United States Court at Cincinnati on May 29 awarded the heirs of Thomas McKell a judgment of $125,000 against the Chesapeake & Ohio for failure to carry out an agreement to build a track to the plaintiff's mines. The suit has been pending since 1902, and originally involved a claim for several million dollars in damages.

The United States Circuit Court of Appeals at Richmond, Va., June 16, Judge Pritchard, presiding, affirmed the action of the District Court at Wilmington, N. C., in holding that the federal government could not recover from the Atlantic Coast Line the price of diamonds stolen from a mail car which had been wrecked and burned at Lucama, N. C. Evidence showed that the railroad had paid a fine of $500 imposed by the postmaster general for loss of mail on the wrecked train. Both courts held that the road used reasonable precautions and was not responsible for theft of the gems.

Interstate Commerce by Ferry Boat

The Supreme Court of the United States in a decision handed down this week sustains the Chosen Freeholders of Hudson county, New Jersey, acting under New Jersey law of the year 1799, in an order fixing fares for single and round trips to New York on the Port Richmond and Bergen Point ferry. The court held that states may regulate ferries from shore to shore across interstate streams so long as Congress does not take action in the premises.

It was held that states were not empowered to require interstate ferries to take out licenses from the state for the right to do business, and such an ordinance of the city of Sault Sainte Marie, Mich., was annulled.

REFRIGERATOR CARS ON THE SIBERIAN RAILWAY.—The Bourse Committee of Omsk has sent a petition to the Russian department of commerce and industry, which in turn has handed it on to the Railway Bureau, regarding the construction of shore refrigerators for the preservation of valuable fish products at the towns of Nikolaievsk, Khabarovka and Sryotensk and also the equipment of refrigerator cars for the conveyance of fresh "keta" to the inland markets during the warm season. Although it is hoped to satisfy these requirements, when the entire Siberian lines are equipped with proper refrigerator buildings, in accordance with a general plan for the adoption of the system to railway transport, nevertheless, the railway administration is anxious to meet the wishes of the petitioners and the needs of the fishing industry through the provision of refrigerator cars for the railway itself and to this end it has invited the chairman of the Siberian sub-district committee for the regulation of freight transport in bulk on the railways, at the town of Novo-Nikolaievsk, to explain the requirements of the fishing industry, both as regards shore cold storage warehouses and refrigerator cars. The chairman of the committee in his turn has applied to the Khabarovka municipal administration for data with reference to the desirability of erection at the place of a shore refrigerator, together with statistical information as to the annual export of fish products from Khabarovka, the precise character of said goods and the distribution monthly, including the destination of the largest shipments. The Mayor of Khabarovka has handed on this request to the Bourse committee for reply.

Railway Officers

Executive, Financial, Legal and Accounting

Paul H. King has been appointed receiver of the Pere Marquette, succeeding Samuel M. Felton, resigned.

T. F. Dunaway, vice-president and general manager of the Nevada-California-Oregon and the Sierra & Mohawk, has resigned. He has been succeeded by Charles Hamilton as vice-president, and Ramsey M. Cox as general manager, both with headquarters at Reno, Nev.

The offices of J. A. Taylor, comptroller of the Central of New Jersey; J. E. Brokaw, assistant comptroller; F. M. Snyder, auditor of freight traffic, and George Wolf, auditor of passenger traffic, are to be moved on July 1 from Philadelphia to 143 Liberty street, New York City. About 150 to 200 clerks will have to change their residences.

Frank H. Alfred, general manager of the Pere Marquette, has been appointed chief executive officer for the receivers, with headquarters at Detroit, Mich., succeeding W. A. Garrett, resigned. Mr. Alfred was born at Logan, Ohio, December 24, 1866, and was educated at the University of Michigan and the Ohio State University. He began railway work in 1887 as rodman on construction of the Columbus, Lima & Milwaukee, and later was made resident engineer. From March, 1889, to 1894, he was assistant engineer of the Norfolk & Western in charge of field work on construction of the terminal at Columbus, Ohio, and from the latter date until April, 1896, was assistant to the chief engineer of the Hocking Valley. He was then successively engineer maintenance of way of the Cleveland, Akron & Columbus and the Wheeling & Lake Erie, and in 1900 became assistant engineer of the Pere Marquette. He was made chief engineer in October, 1902, and resigned October 1, 1905, to become manager of the Canadian White Company, Limited, of Montreal, Que. Mr. Alfred returned to railway service in 1908 as assistant to the president of the Cincinnati, Hamilton & Dayton, and from August, 1910, to April, 1912, was general superintendent of that road at Cincinnati, Ohio. He then returned to the Pere Marquette as assistant general manager, being made general manager in December of that year.

Frank H. Alfred

Operating

J. G. Sharp has been appointed trainmaster of the Tampa & Gulf Coast, with office at Gary, Fla.

I. K. Dye has been appointed general manager of the Coal & Coke Railway, with office at Elkins, W. Va.

The office of W. D. Johnson, assistant superintendent of the Duluth, South Shore & Atlantic, has been removed from Thomaston, Mich., to Superior, Mich.

F. M. Woodall, trainmaster of the Atlanta, Birmingham & Atlantic at Manchester, Ga., has been appointed superintendent of the Birmingham division, with headquarters at Manchester, succeeding D. F. Kirkland, resigned to go to another company.

E. H. Beckley has been appointed trainmaster of the Macon, Dublin & Savannah, with headquarters at Macon, Ga., and will assume the duties heretofore performed by F. C. Tucker, superintendent of transportation, deceased. A. L. Williams has been appointed car accountant, with office at Macon, Ga.

H. L. Reed, superintendent of the Nebraska division of the Rock Island Lines at Fairbury, Neb., has been appointed superintendent of the Kansas division, with headquarters at Herington, Kan., vice A. B. Ramsdell transferred. W. A. Sheahan, superintendent of the Colorado division at Colorado Springs, Colo., succeeds Mr. Reed, and J. A. McDougal takes the place of Mr. Sheahan.

R. D. Fitzmaurice, who has been appointed superintendent of the Providence division of the New York, New Haven & Hartford, with headquarters at Providence, R. I., was born on August 2, 1865, and entered the service of the New York & New England in May, 1884, as train despatcher. He was then consecutively chief train despatcher and trainmaster until August, 1912, when he was appointed superintendent of the Western division of its successor, the New York, New Haven & Hartford, with headquarters at Waterbury, Conn., which position he held at the time of his recent appointment as superintendent of the Providence division of the same road, as above noted.

Traffic

J. A. Cooley has been appointed immigration agent of the South Dakota Central, with headquarters at Sioux Falls, S. D.

B. S. Fay has been appointed commercial agent of the Winston-Salem Southbound, with office at Jacksonville, Fla., succeeding Willis Callaway, resigned to accept service with another company.

Engineering and Rolling Stock

George W. Hand has been appointed valuation engineer of the Chicago & North Western, with office at Chicago.

David Gratton, general foreman of the Oregon Short Line, has been appointed master mechanic at Pocatello, Idaho.

D. J. Malone, master mechanic of the Oregon Short Line at Ogden, Utah, has been transferred to Pocatello, Idaho.

The headquarters of A. C. Hinckley, superintendent of motive power and machinery of the Oregon Short Line, have been moved from Salt Lake City, Utah, to Pocatello, Idaho.

J. C. Schepp, general foreman of shops of the Texas & Pacific at Marshall, Tex., has been appointed master mechanic, with headquarters at Texarkana, Tex., succeeding George M. Lovett. J. A. Carleston, general foreman at Big Springs, Tex., succeeds Mr. Schepp.

Oscar Sidney Bowen, whose appointment as principal assistant engineer of the Great Northern, with headquarters at Seattle, Wash., has already been announced in these columns, has been in railway service since 1888. He began railway work with the Coeur d'Alene Railway & Navigation Company in Idaho, and held various positions in the engineering department of the Washington & Idaho, the Seattle, Lake Shore & Eastern, the Spokane Falls & Northern, the Nelson & Fort Shepard and the Great Northern, until 1901, when he was made resident engineer of the latter road at Spokane. Later he was transferred to Seattle in a similar capacity, which position he held until his recent appointment as principal assistant engineer, as above noted.

James Simpson Browne, whose appointment as assistant engineer of the New York, New Haven & Hartford at New Haven was noticed last week, was born at Willet, Pa., in 1861, and entered railroad service in 1880 as a chainman on the Yellowstone division of the Northern Pacific. From March, 1881, to April, 1884, he was inspector of dredging, filling and force accounts on the New York, West Shore & Buffalo at Weehawken, N. J. Then for two years he was on the Brooklyn Elevated and New Jersey Junction railroads, and later was assistant engineer for the contractor on the Washington Bridge, New York City. He entered the service of his present employer in 1889, and for four years was transitman and assistant engineer on surveys, plans, bridge work, etc., for 4-track widening through the cities of Providence and Pawtucket. In October, 1893, he was appointed assistant engineer and in June, 1903, division engineer, in charge of maintenance of way and structures. This place he has

held until now. He is a member of the American Society of Civil Engineers and of the American Railway Bridge and Building Association.

W. H. Finley, assistant chief engineer of the Chicago & North Western, has been appointed chief engineer, with headquarters at Chicago, succeeding E. C. Carter, resigned. He was born in New Castle county, Delaware, and was educated in the public schools at Wilmington, Del., and by private instruction in engineering. He entered the service of the Edgemoor Iron Company at Wilmington in 1881, remaining with that company until 1887, when he began railway work in the bridge and building department of the Chicago, Milwaukee & St. Paul. He left the employ of that road in 1892 to go to the Chicago & North Western as engineer of bridges. Since then he has been successively principal assistant engineer and assistant chief engineer, being promoted to chief engineer, as above noted, on June 1. Mr. Finley is a member of the American Society of Civil Engineers, and is past president of the Western Society of Engineers and the Chicago Engineers' Club.

Photo by Matzene, Chicago

W. H. Finley

Purchasing

H. B. Martin has been appointed purchasing agent of the Coal & Coke Railway, with office at Elkins, W. Va.

OBITUARY

Walter J. Eddington, general foreman of the Atchison, Topeka & Santa Fe at Corwith, Ill., died at his home in Chicago on May 29, aged 65 years.

D. K. Colburn, assistant general manager of the Sunset Central Lines, Houston, Tex., died at Woodhull, Ill., June 3 at the age of 68. Mr. Colburn had gone to Woodhull, his former home, about a month ago, on account of continued ill health. He had been connected with the Sunset Central Lines since 1889, having been employed first in the bridge department. Before entering the railroad service he had been engaged in bridge building. On the day of his death President W. B. Scott issued an announcement to the officers and employees of the road eulogizing Mr. Colburn's high character.

Henry W. Gays, general manager of the Ottawa & New York, died at his home in Ottawa, Ont., May 31, after an illness of four months. Mr. Gays was born at Brant, N. Y., March 21, 1849, and entered the railway service as a messenger boy in 1861; and he had been in the transportation business, either railroad or steamboat, for a period of fifty-three years. At the age of 14 he became a telegraph operator on the Erie at Dunkirk. After numerous promotions in the railroad service, he became general agent for the Louisville & Cincinnati Mail Line steamers in 1874. Three years later he went to the Big Four Railroad, and in 1879 was made assistant general freight agent of that road. In 1885 he was promoted to the position of superintendent; but a year later he went to the Wiggins Ferry Company, St. Louis. He was an officer on the railroads of that company a short time and then was appointed general manager of the St. Louis Merchants' Bridge & Terminal Railway. For a time, he was general manager of the Chicago, Peoria & St. Louis, and he went to the New York & Ottawa, now the Ottawa & New York, in February, 1899. He had been there ever since. For the years, 1900-1905, he was receiver; and since March 1, 1905, had been general manager.

Equipment and Supplies

LOCOMOTIVE BUILDING

The Grand Trunk has placed an order for 4 locomotives for suburban service.

Solvay Process Company has ordered 50 steel hopper cars from the American Car & Foundry Company.

The Chicago, Indianapolis & Louisville has ordered 5 Santa Fe type locomotives from the American Locomotive Company.

CAR BUILDING

The Aurora, Elgin & Chicago is in the market for 10 gondolas.

The San Antonio & Aransas Pass is in the market for 50 flat cars.

The Chicago & North Western has ordered 250 Rodger ballast cars.

The St. Louis, Brownsville & Mexico has ordered 15 passenger cars from the Pullman Company.

The St. Louis, Brownsville & Mexico has ordered 10 caboose cars from the Mount Vernon Car & Manufacturing Company.

The Bangor & Aroostook has ordered from the American Car & Foundry Company four steel underframe caboose cars 40 ft. long.

The Illinois Central has ordered 3,000 40-ton box cars, 1,000 from the American Car & Foundry Company, 1,000 from the Western Steel Car & Foundry Company, and 500 each from the Haskell & Barker Car Company and the Standard Steel Car Company.

IRON AND STEEL

The Seaboard Air Line is inquiring for 6,000 kegs of spikes.

The Cumberland Valley has ordered 2,500 tons of standard rails from the Pennsylvania Steel Company.

The Northern Pacific has ordered 2,450 tons of bridge material from the American Bridge Company.

The Seaboard Air Line has ordered 5,000 tons of standard rails from the Pennsylvania Steel Company.

The Chicago, Milwaukee & St. Paul has ordered three deck girder spans, 148 tons, from the Milwaukee Bridge Company.

The Chicago, Rock Island & Pacific has ordered 218 tons of bridge material from the Chicago Bridge & Iron Company.

The Chicago, Milwaukee & St. Paul has ordered nine deck girder spans, 160 tons, from the Milwaukee Bridge & Iron Company.

The Chicago & Western Indiana has ordered 805 tons of bridge material from the Lackawanna Bridge Company for viaducts at Crawford and Cicero avenues, Chicago.

The New York, New Haven & Hartford recently ordered 9,000 tons of rails, the order being divided between the Bethlehem Steel and the Pennsylvania Steel companies.

Rope Railway in India.—A rope railway, 75 miles in length, is to be put in operation in India. It will connect the rich country in the vale of Kashmir with the plains of the Punjab over the Himalayas. The line, it is claimed, will be the longest in the world, the present longest being 22 miles and situated in Argentina. Sections will be 5 miles long, and most of the spans will be 2,400 ft. The steel towers, some of which will be 100 ft. high, will be braced, and double 1½ in. cables, 9 ft. apart, will carry the steel cars. The carrying capacity of these cars will be about 400 lb.

Supply Trade News

The Baltimore & Ohio has contracted with the Pyle National Electric Headlight Company, Chicago, for 130 type E headlights.

W. D. Jenkins, 1408 Whitney Central building, New Orleans, La., has been appointed southern representative of the Union Railway Equipment Company, Chicago.

George C. Marsh has been made general manager of the Milwaukee Concrete Mixer & Machinery Company, Milwaukee, Wis. He succeeds W. J. Roseberry, Jr.

Charles Neilson, formerly general manager of the Cincinnati, Hamilton & Dayton, and before that superintendent on the Erie, has opened an office as consulting engineer at 30 Broad street, Room 1642, New York City.

J. A. Bodkin has resigned from his position as engineer for the Q. & C. Company, New York, effective June 15, after which time he will be associated with his brother in the Track Specialties Company, 29 Broadway, New York.

Fred A. Poor, formerly Chicago representative of the Rail Joint Company, has resigned to become president of the P. & M. Company, Railway Exchange, Chicago, succeeding R. N. Baylies, elected chairman of the board of directors.

Through an unavoidable error in the *Railway Age Gazette* of May 29, the name of G. H. Dirhold, who has recently been appointed advertising manager of the Walter A. Zelnicker Supply Company, St. Louis, was spelled G. H. Dixhold.

The American Emery Wheel Works, Providence, R. I., will soon begin work on a third floor addition 55 by 100 ft., to their East River street building, to be used as main offices. The present office space will be converted into additional manufacturing room.

L. R. Pomeroy, the well known railway and electrical engineer, has been appointed manager of the New York sales office of the United States Light & Heating Company, of Niagara Falls, with office at 24 West Sixty-first street. Mr. Pomeroy has been in the railroad and railroad supply business for more than thirty-five years, and has a very wide acquaintance. He was born at Port Byron, N. Y., in 1857, and was educated at Irving Institute, Tarrytown, N. Y. From 1880 to 1886 he was secretary and treasurer of the Suburban Rapid Transit Company, of New York, and then for nine years he was with the Carnegie Steel Company, introducing basic boiler steel for locomotives and special forgings. Subsequently he engaged in the same kind of work with the Cambria Steel Company and the Latrobe Steel Company jointly. For three years to 1902 he was assistant general manager of the Schenectady Locomotive Works, and then for six years represented in the railway field the General Electric Company. Then he went to the Safety Car Heating & Lighting Company, and afterwards to J. G. White & Co., as chief engineer of the railway and industrial divisions. For some time past he has had an office as consulting engineer at 50 Church street, New York.

L. R. Pomeroy

The Hatfield Rail Joint Manufacturing Company, Macon, Ga., has made arrangements with T. B. Bowman, formerly assistant to the president of the Q. & C. Company, and now with the Efficiency Company, New York, to assume charge of sales of the Hatfield Rail Joint Company, with office at 2 Rector street, New York, and 700 Railway Exchange, Chicago.

The Chicago Great Western has awarded a contract to the Roberts & Schaefer Company, Chicago, for the building of three 100-ton capacity reinforced concrete locomotive coaling plants, for installation at St. Joseph, Mo., Carroll, Iowa, and Kenyon, Minn.; also for a 50-ton capacity frame coaling station at Red Wing, Minn. The Pere Marquette has awarded this firm contracts for the building of two 100-ton concrete stations for installation at Blenheim, Ont., and Port Huron, Mich.

The McKeen Motor Car Company, of Omaha, Neb., has received orders for two 70-ft. 200 horse power gasolene motor cars from the Central New York Southern, Ithaca, N. Y., and for one 70-ft. car from the Arkansas Northwestern, Bentonville, Ark. This company has recently delivered one 55-ft. gasolene motor freight and express car to the Minneapolis & Northern, Minneapolis, Minn., and one 70-ft. 200 horse power gasolene motor car to the Minneapolis, St. Paul & Sault Ste. Marie.

W. J. Roseberry, Jr., formerly general manager of the Milwaukee Concrete Mixer & Machinery Company, Milwaukee, Wis., has been appointed sales manager of the newly organized concrete mixer department of the Power & Mining Machinery Company, Cudahy, Wis., which manufactures the International Concrete Mixer.

L. A. de Vore, formerly advertising manager of the Standard Scale & Supply Company, Chicago, has been appointed assistant sales manager.

TRADE PUBLICATIONS

CRANES.—The Brown Hoisting Machinery Company, Cleveland, Ohio, has issued catalog P, descriptive of the Brownhoist overhead hand traveling cranes.

SHEETS AND PLATES.—The Inland Steel Company, Chicago, has recently issued a pamphlet describing the composition of its Vismera pure iron and the uses for which it is adapted.

CAR DOOR FASTENERS.—The Universal Car Seal & Appliance Company, Albany, has recently issued a leaflet describing the "Universal" car door fastener.

LIGHTING FIXTURES.—The Dayton Manufacturing Company has recently issued bulletin No. 173, an eight-page folder devoted to its high efficiency, large unit lighting fixtures for electric railways cars.

WAGON AND TRUCK LOADERS.—The Link Belt Company, Chicago, has published book No. 190 describing its line of wagon and truck loaders for handling coal, coke, stone, sand and similar loose materials from storage.

BRAKE BEAMS.—The Buffalo Brake Beam Company, New York, has recently issued a very attractive catalog containing halftones and plans of the various types of brake beams and brake beam parts made by the company.

TRACK LAYERS.—The Madden Company, Chicago, has recently issued a pamphlet describing the construction and operation of its "three-man" track layer. Illustrations showing the machine in actual operation are also included.

CAR ROOFS.—The American Car Roof Company has issued an attractive pamphlet describing the Christy all-steel roof and containing numerous illustrations and sectional drawings showing the various parts assembled and unassembled.

USED MATERIAL.—The Walter A. Zelnicker Supply Company, St. Louis, Mo., has just issued bulletin No. 153 in the form of an illustrated circular listing the company's special offerings of used material, and also including an illustrated page on new goods and specialties handled by the company.

JACKS.—The Cayuta Manufacturing Company, Sayre, Pa., has recently issued a very attractive catalog illustrative of its line of standard ball and cone bearing geared screw jacks and standard high speed and motor operated geared screw jacks. The various jacks are pictured; specifications and price lists are given for each size of jack included, and the parts of each style of jack are shown in detail.

Railway Construction

Butte-Boise & San Francisco.—An officer writes that this is the new name of the Butte-Boise-Winnemucca, which has amended its articles of incorporation, and increased its capital from $40,000,000 to $125,000,000. The headquarters of the company are at Boise, Idaho. The plans call for building from Butte, Mont., west to a point about four miles east of Anaconda, thence in a general southwesterly direction along Mill creek to the summit of the Rocky mountains, and via Ralston, Wisdom and Jackson, to the summit of the Bitter Root range, and through Gold Stone pass into Idaho, thence via Salmon, Ellis, Challis, Stanely, Cape Horn, and along the summit of the Sawtooth range to Lowman, and via Pioneerville, Centerville, Boise, to Homedale, continuing through the Succor Creek canyon to a point in Malheur county, Oregon, thence via a point near Sheaville, to the northeast corner of California, thence via Anderson, Woodland and Napa Junction to Sausalito. L. O. Leonard, president; T. F. Halveston, vice-president, Boise, Idaho; W. M. Rank, vice-president, San Francisco, and L. W. Ensign, secretary and treasurer. (August 15, 1913, p. 313.)

Butte-Boise-Winnemucca.—See Butte-Boise & San Francisco.

Butte, Wisdom & Pacific.—See Southern Montana (May 1, p. 1011).

Chicago, Peoria & Quincy.—It is thought that work on the proposed line of this company from Peoria to Quincy will be started within 30 days. All preliminary work has been completed and construction will be started near Hollis. W. T. Irwin, 1020 Jefferson building, Peoria, Ill., is vice-president.

Galveston, Harrisburg & San Antonio.—An officer writes that a grading contract has been let to M. Garvin, Houston, Tex., for work on a section of the line from Strang, via Morgan, Sylvan Beach and Red Bluff to Seabrook, 12.5 miles. Some of the work is being carried out by the railway company's forces. Track has been laid on two miles. (May 29, p. 1215.)

Hershey Transit Company.—Bids are wanted until June 20, by H. N. Herr, chief engineer, Hershey, Pa., for the construction of about 9.2 miles of railway from Hershey Industrial School, Dauphin county, Pa., to Elizabethtown, Lancaster county.

Municipal Railways (New York).—The New York State Public Service Commission, First district, has awarded to Terry & Tench the contract for building the structure for the third-tracking of the Fulton street elevated railroad, in Brooklyn, from Nostrand avenue to Sackman street. The amount of the bid was $462,872. The steel has already been ordered from Milliken Brothers. The contract includes the re-arrangement of some parts of the existing elevated structure and raising the tracks in places to a new grade.

Southern.—Plans have been approved for double tracking the line between Charlotte, N. C., and Atlanta, Ga. See Financial News.

Southern Montana.—An officer writes that this is the new name of the Butte, Wisdom & Pacific. The plans call for building a main line from Silver Bow, Mont., west via the Big Hole valley, thence through Feeley, Divide, Dewey, Allen, Ralston, Fish Trap and Wisdom to Jackson, 74 miles. At Allen connection will be made with the projected Elkhorn branch, 29 miles, and at Ralston connection will be made with the French Gulch branch, 7 miles. The general contract has been given to MacArthur Perks Co., New York. All the work will be light except on a 4-mile section of rock canyon work. There will be three tunnels, and the maximum grade will be 1 per cent., and maximum curvature 8 degrees. There will be a number of timber trestles and Howe trusses on the line. The principal commodities to be carried will be ore, timber, cattle, hay, and farm and dairy products. O. A. Ruffner, principal assistant engineer, Butte, Mont.

Railway Financial News

Boston & Maine.—It is understood that over $25,000,000 of the $27,000,000 Boston & Maine notes which were due June 1 have been deposited for extension.

Canadian Northern.—Both Houses of the Canadian Parliament have passed the bill providing for a guarantee by the government of this railway company's four per cent. twenty-year bonds, to the amount of $45,000,000; and it is understood that the royal assent will be given this week. Sir William MacKenzie will at once start for London to market the bonds. Statements made by the government indicate that the bonds must be sold at 92 in order to realize the sum necessary to complete the railway company's lines.

Chicago, Rock Island & Pacific.—Joint meetings are being held by the stockholders' committee of the Rock Island and the bondholders' committee representing the railroad 4 per cent. collateral trust bonds.

Des Moines & Fort Dodge.—See Minneapolis & St. Louis.

Greenville & Knoxville.—This road, which runs from Greenville, S. C., to River Falls, 28 miles, has been sold under foreclosure to W. T. Thompson, for a price said to be $35,000.

Interoceanic of Mexico.—The company has sent out a circular to holders of the 4 per cent. and 4½ per cent. second debenture stocks asking them to accept certificates of indebtedness for two half yearly interest payments in each case. This action is necessitated, the directors say, by the inability of the company to operate all its lines by reason of military disturbances and to the fall in the exchange value of the Mexican dollar.

Kansas City, Mexico & Orient.—Charles H. Jones & Co., New York, are recommending as an investment the $5,500,000 two-year, 6 per cent. notes which are being issued under the reorganized plan of the bond holders' protective committee, and are being offered to the public at 97½, yielding about 7.25 per cent. on the investment.

Lehigh Valley.—The New Jersey Public Utility Commission has approved the lease of the Lehigh Valley of New Jersey to the Lehigh Valley of Pennsylvania, thus reversing a former decision.

Pere Marquette.—Paul H. King has been appointed receiver, succeeding Samuel M. Felton, resigned.

St. Louis & San Francisco.—The special master appointed to pass upon claims against the property has notified creditors that all claims must be filed before October 1.

Minneapolis & St. Louis.—Stockholders of this company and of the Des Moines & Fort Dodge have ratified the agreement for the merger of the two companies.

Southern.—Application, on behalf of the Atlanta & Charlotte Air Line Company, has been made to the Georgia Railroad Commission for authority to issue $20,000,000 in 5 per cent. twenty years gold bonds, of which $14,500,000 will be issued over a period of five years, to provide for laying a second main track between Atlanta and Charlotte. The distance between these two points is 268 miles, of which 40 miles already has double track. The remainder of the bonds—$5,500,000—will be used to retire a like amount of outstanding first mortgage bonds.

Electrification in Argentina.—The electrification of the Buenos Aires Western suburban system ranks with the largest railway electrification schemes yet undertaken. The lines will be operated on a circuit of 800 volts direct current.

Beira-Zambesi Railway.—The articles of association of the Beira-Zambesi Railway Company in Brussels have been sent to Lisbon for the approval of the Portuguese government. As soon as this has been obtained the company will be formed and construction of the line commenced.